Railway Age

With which are incorporated the Railway Review, the Railroad Gazette and the Railway Age-Gazette.

Vol. 86 March 2, 1929 No. 9

Name Registered U. S. Patent Office.

The Rock Island's "Golden State Limited" near El Paso, Texas

Contents

Four Tracking on New York Central Involves Heavy Work . . . Page 517

A description of this road's construction undertaking in which 840,000 cu. yd. of rock were removed under unusual difficulties in project nearing completion along the Hudson river; three tunnels involved.

Controlling an Interlocking from a Remote Point 523

W. F. Zane, signal engineer, Chicago, Burlington & Quincy, tells how this road successfully operates an important crossing with electrical equipment controlled from a centralized machine 1.5 miles away.

Central of New Jersey Inaugurates De Luxe Coach Trains 529

An article describing this road's new specially fitted and decorated trains, "The Blue Comets," recently placed in service between New York and Atlantic City.

EDITORIALS

Railways and the Stock Market 513
Controlling Yard Costs 513
The Flexibility of the Oil Burner 513
Extending the Field of Remote Control 513
Another Railroad Starts Interstate Highway Operation . . 514
Saving 90,000,000 Tons of Coal 514
Motive Power Conditions and Improved Operation 514
The Consolidation Situation 515
Inadequate Rental Charges for Use of Public Property . . . 515

GENERAL ARTICLES

Four Tracking on New York Central Involves Heavy Work 517
Proceedings to Adjust Northern Pacific Land Grant Proposed 522
Controlling an Interlocking from a Remote Point, By W. F. Zane 523

GENERAL ARTICLES—Continued

I. C. C. Replies to Governor Reed 526
Freight Car Loading 528
Central of New Jersey Inaugurates DeLuxe Coach Trains 529
Burlington Improves Efficiency 532
Motor Transport Division Meets 534
Maintenance of New York Central Rolling Stock 534
Some Aspects of Consolidation, By Dr. Julius Grodinsky 535
Burlington Tests Mack Switching Locomotive 539
What is the Function of the Lumber Wholesaler? 541
The Careless Auto Driver 543

COMMUNICATIONS AND BOOKS 544
LOOKING BACKWARD 545
ODDS AND ENDS OF RAILROADING 546
NEWS OF THE WEEK 547

The Railway Age is indexed by the Industrial Arts Index and also by the Engineering Index Service

Published every Saturday by the Simmons-Boardman Publishing Company, 34 North Crystal Street, East Stroudsburg, Pa., with executive offices at 30 Church Street, New York

All communications should be addressed to the New York Office, 30 Church Street

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The Railway Age is a member of the Associated Business Papers (A. B. P.) and of the Audit Bureau of Circulations (A. B. C.)

Subscriptions, including 52 regular weekly issues and special daily editions published from time to time in New York, or in places other than New York, payable in advance and postage free; United States, Mexico and Canada, $6.00. Foreign countries, not including daily editions $8.00.

Subscriptions for the fourth issue each month only (published in two sections, the second of which is the Motor Transport Section) payable in advance and postage free; United States, Mexico and Canada, $1.00; foreign countries, $2.00. Single copies, 25 cents each.

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Railway Age

Vol. 86, No. 9 March 2, 1929 Table of Contents Appears on Page 5 of Advertising Section

Railways and the Stock Market

IF railway stocks do not keep pace with industrial shares in an advancing stock market, neither do they fall so rapidly when the market declines. The Wall Street Journal's average price of 20 railroad stocks at the highest point reached this year—February 2—was 161.32. On February 16 this average had declined to 151.58, or less than 10 points. The average price of 30 industrial stocks between the same dates declined from 322.06 to 295.85, or slightly more than 26 points. Railway stocks, then, if they do not offer possibilities of the largest rewards, at the same time do not involve the danger to the investor of equally heavy losses. That this condition of financial stability is possible in spite of inadequate earnings on the investment is due to a long period of conservative financial practices. Financial soundness has been secured over a long period by the owners having returned to the property for reinvestment sums which might legitimately have been paid out in dividends and which undoubtedly would have been paid out in dividends in the case of the average uncontrolled industrial enterprise. Financial conservatism in a public service industry is praiseworthy. A sound public policy should encourage it. There could be no better encouragement than rewarding honest and wise conservatism with a return on the investment in properties so managed at a rate in some measure comparable with that earned by companies not subject to regulation.

Controlling Yard Costs

ONE of the most effective means of controlling yard costs is to be found in daily cost statistics supplied to the supervisor in charge and also to executive operating officers. In some operations the process of arriving at exact costs is so formidable and so prone to error as to render the statistics practically valueless, or at least not of sufficient value to be worth the effort. This does not apply, however, in the case of yard costs, where exact figures are obtainable, and, what is more important, are available promptly. This enables an immediate check to be made by the yardmasters, one of whose chief values is its timeliness. Roads operating under as widely varying terminal conditions as the Northern Pacific and the Boston & Maine are using daily yard cost statistics to excellent advantage. In the case of the Northern Pacific, the figures are obtainable promptly by means of decentralized accounting. That is to say, each division has its own accounting organization, equipped to turn out daily cost statistics on short notice. In this manner the distances between the various yards and central headquarters cease to be a factor in the timeliness of the statistics supplied. On the Boston & Maine, the methods used are the reverse of those on the Northern Pacific, for all terminals are within a relatively short distance from headquarters and the daily cost figures are prepared and sent out from the central statistical bureau. The methods used in furnishing this information, provided only that it is accurate and prompt, may vary widely; yet the results are much the same. As a result of providing the supervisors with a timely check on their operations a distinct decrease in yard costs is noticeable on both the Boston & Maine and the Northern Pacific.

The Flexibility of the Oil Burner

ONE advantageous feature of oil-burning locomotives which, it is generally recognized, sometimes leads to abuse, is their free-steaming characteristics. As a rule, these locomotives, equipped to burn oil, produce steam more freely than coal-burning locomotives, and firemen sometimes take advantage of this fact. They become careless and allow the steam pressure to drop back 10 or 15 lb., knowing that it will take but a few minutes to regain the pressure. While it is true that the pressure can be easily and quickly brought back up, it requires forcing the boiler more than would otherwise be required, and results in a loss of fuel, which, if repeated frequently throughout the trip, has an appreciable effect on the fuel performance. It is only by constant watchfulness on the part of the fireman in maintaining maximum steam pressure at all times, so far as possible, that the best fuel results can be secured. Complete harmony and co-operation between the fireman and the engineman are also essential if the safety valves are to be kept from popping under a light load, and the steam pressure from dropping unduly when a heavy load is applied. That increased attention is being given to these more or less well-known features of locomotive operation is shown by the record fuel performance of 142.6 lb. of fuel per thousand gross ton-miles, excluding locomotive and tender, which was made by the railroads in 1928.

Extending the Field of Remote Control

TWO important developments in the signaling field make possible the more extensive use of remote control power operation for outlying switches, or even for complete interlockings. In the early days of interlocking, the leverman was so located that he could see the position of trains with reference to the switches. With the introduction of track circuits and illuminated track diagrams in the tower, this is no longer necessary for a leverman can determine with accuracy the position of a train without seeing the tracks or trains. The control machine can be, therefore, located remotely. The simplified circuits, using a minimum number of line wires, which have been developed for the centralized dispatcher systems for the direction of train movements by signal indication, are readily adapted for the control of remote

power switches at outlying junctions or crossings. As explained in an article elsewhere in this issue, the Burlington has recently completed an installation in which an illuminated track diagram and the simplified dispatcher control circuits were used for the operation of a complete interlocking plant more than 1.5 miles away. The elimination of the levermen previously required to operate the old mechanical plant at the crossing represents a saving of $4,396 annually, over and above the carrying charges on the cost of the new equipment, while train movements are co-ordinated to better advantage because one man has charge of a larger area in which these movements are directed by signal indications. The Burlington is proceeding to use this method of control at several other outlying junctions; no doubt, other roads have numerous layouts where a similar arrangement can be applied to advantage.

Another Railroad Starts Interstate Highway Operation

ONE more railroad—the Reading—has begun the operation of interstate motor coach service. This company, through its subsidiary, the Reading Transportation Company, on February 28 began the operation of motor coach service between Philadelphia and Atlantic City, paralleling its rail line between those points. In addition to several intrastate motor coach routes in Pennsylvania, the company has since last summer had a motor coach operation from Atlantic City along the coast southward to Cape May and this new operation will, in effect, extend this route into Philadelphia. The Pennsylvania Railway, by the acquisition of a large stock interest in the Peoples Rapid Transit motor coach lines several weeks ago, is already represented in interstate motor coach service between Philadelphia and the Jersey coast. The provision by the railways of motor coach service in South Jersey is primarily a defensive measure. In spite of the fact that the two railways have provided this territory with the fastest passenger service on the American continent, nevertheless their passenger revenues have shown serious declines, largely attributable to the competition of independent motor coaches. Co-ordination of railway motor coach service with train service should result in the protection of gross revenues and possibly permit some reductions in railway operating expenses. The step should be one to occasion satisfaction on the part of the residents of the territory, since the maintenance of a high standard of transportation service is essential to the very existence of a resort and residential community.

Saving 90,000,000 Tons of Coal

CURRENT operating statistics compiled by the Interstate Commerce Commission show that the trend of increased efficiency in railway use of fuel, so marked in recent years, has continued, in the year just ended, in both freight and passenger service. Complete figures for the entire year 1928 are not yet available but estimates made from actual figures covering the first eleven months indicate that the railways last year got more work out of a pound of coal than ever before.

These estimates show that in 1928 a pound of coal, in freight service, produced 7.9 gross ton-miles. Corresponding figures for earlier years were 7.7 gross ton-miles per pound of coal in 1927, 7.3 in 1926, 7.1 in 1925, 6.7 in 1924 and 6.2 in 1923. In other words, a pound of coal in railway freight service is producing 3 per cent more work than in 1927, 8 per cent more than in 1926, 11 per cent more than in 1925, 18 per cent more than in 1924, and 27 per cent more than in 1923. While these percentages are highly significant, of course, the real meaning of the railways' record can best be grasped, perhaps, from the statement that the average pound of coal last year moved a load of one ton for a distance of almost eight miles, or almost a mile and three-quarters more than in 1923.

On the basis of actual traffic figures, increased efficiency in fuel use over the 1923 level has resulted in saving 6,515,000 tons of coal in 1924, 12,203,000 tons in 1925, 14,958,000 tons in 1926, 18,483,000 tons in 1927 and 20,534,000 tons in 1928. This means a total saving, in freight service alone, of 72,693,000 tons of coal in the last five years, or a money saving, at the average railway fuel prices in the respective years of more than $193,000,000.

Likewise, in passenger service the amount of fuel consumed per passenger-train car-mile has been reduced each year, from 18.1 pounds in 1923, 17.0 pounds in 1924, 16.1 pounds in 1925, 15.8 pounds in 1926, and 15.4 pounds in 1927 to approximately 15.0 pounds in 1928. This increased efficiency in fuel use over the 1923 basis has saved 20,927,000 tons of coal, worth $55,711,000, in railway passenger service in the last five years.

Combining the two services, it appears that the strenuous efforts of the railways in the past five years to reduce unit fuel consumption have resulted in a total fuel saving in road transportation service of 93,620,000 tons of coal or $248,978,000.

Motive Power Conditions and Improved Operation

IN an address before the New York Railroad Club, A. G. Pack, chief inspector of the Bureau of Locomotive Inspection, Interstate Commerce Commission, pointed out the parallelism existing between the trends in freight-train operation and the improvement in locomotive conditions as reflected in the number of locomotives inspected that were found defective and the number ordered out of service by the representatives of the bureau.

The improvements in operation referred to are the increase in average miles per hour in freight-train service and the decreases in coal consumption, both in freight- and passenger-train service.

It is entirely proper to attribute some of the decrease in fuel consumption to the general improvement in the condition of locomotives in service, which has taken place coincidentally. Those officers of the railroads who have been charged with the responsibility of securing the utmost economy in the use of fuel have for years emphasized the need for prompt attention to defects affecting the steaming of the locomotive and the efficiency with which the steam can be utilized in the cylinders. While the improvements in locomotive conditions, reflected by the decrease in the percentage of those inspected by the Bureau's representatives which

were found defective and in the number which they have found it necessary to order out of service, cover many conditions not directly influencing fuel economy, the generally fore-handed character of the attention locomotives have been receiving at the terminals in recent years has undoubtedly resulted in a marked decrease in the number of locomotives operating in inefficient condition.

A study of the number of locomotives reported by the Car Service Division as having received light repairs discloses the significant fact that for the last four years the number has varied closely with the locomotive-miles in freight service. The improving conditions apparently have required no great increase in the number of locomotives receiving terminal attention. It is possible, of course, that more work may have been done on each locomotive reported, but the declining trend in the number of mechanical department employees and in the expenditures for locomotive maintenance indicate that it is no more expensive to perpetuate high standards of maintenance, once such standards have been attained, than it is to perpetuate low standards of maintenance which leave little margin of safety and lead to numerous failures in service.

The character of the results now being attained is such that the railroads are not likely ever again to permit a heavy accumulation of deferred maintenance, so long as they are permitted to maintain earnings at a level which does not require arbitrary retrenchments to insure solvency.

Recent Developments in the Consolidation Situation

NOW that it appears that the net result of some four years of Congressional hearings on proposed consolidation legislation is to be two committee reports, one last year on the Parker bill in the House and one this year on the Fess bill in the Senate, it seems likely that the next step toward the objective of the consolidation provisions of the Transportation Act of 1920 is to be the resumption by the Interstate Commerce Commission of work on the preparation of a complete consolidation plan. This work has been practically at a standstill for the past four years, following the extensive hearings on the commission's tentative plan of 1921, while the commission and others have recommended to Congress that the provisions requiring a plan be repealed and that other defects in the 1920 legislation be remedied.

The commission has now decided that in the absence of new legislation it can no longer consistently postpone its efforts to comply with the law of 1920. Moreover, the 5 to 5 vote taken by the commission on February 12, on the question of whether it still favored a repeal of the plan provisions, indicates that perhaps more of the commissioners are now in favor of a plan than when the recommendations to Congress were made in the annual reports, although we are not informed as to how the eleventh member of the commission would have voted had he been present nor by what majorities the previous recommendations were approved.

If the commission is now to proceed to the preparation of a plan it has material before it for a start on the eastern part of the plan in the applications filed with it last week by the Baltimore & Ohio and the Chesapeake & Ohio, together with the comments on it which may be expected from the New York Central and Pennsylvania, or some of the roads proposed to be included, which comments would surely be forthcoming if the commission should set the two applications for hearing.

In fact the applications for approval of an enlarged Baltimore & Ohio system and a system built up around the lines already controlled by the Van Sweringens are in effect a request that the commission make a plan for the eastern territory, excluding New England, along the lines of the four-system plan upon which the roads themselves have failed to reach an agreement. Both applications refrain not only from proposing any terms or conditions at this time but also from any assertion that some of the roads involved could be acquired on any terms, although it is apparently the idea that an allocation of a road to a proposed system would be of some assistance in obtaining the necessary control. In this respect they represent a variation from the former practice of first acquiring control of a road and then asking authority from the commission, which has led to some expressions of criticism from members of the commission and in several instances to the institution of Clayton law proceedings. They also represent an earnest effort to induce the commission to commit itself to at least part of a plan without so much assistance from minority stockholders as has beclouded the issues in some of the principal cases heretofore considered by the commission.

One of the primary objects of the Parker bill reported by the House committee and the Fess bill reported by the Senate committee was to relieve the commission of the duty of preparing a complete consolidation plan. The Fess bill, as amended at the last minute by the committee, would substitute a new kind of plan by directing the commission to make a study of transportation facilities and to prepare a tentative plan or plans for its assistance in passing on applications made by the railroads. This is obviously a compromise between the views of those who want a plan and those who do not and if it were adopted the extent to which it would affect the situation would depend largely on the commission. It doubtless means no more than an effort to require the commission to survey the whole field more or less thoroughly before acting in a particular case, but as the language would also prohibit the commission from finally approving a proposed unification until the plan is completed much would depend upon the extent to which the commission would feel that it could or should attempt to hurry matters.

Inadequate Rental Charges for Use of Public Property

IF a private citizen wishes to set up a business in a public building, he usually expects to pay rent for the space he occupies. In most instances, moreover, he will be required to pay the full equivalent of what rental in a private building would be. Under such circumstances there can be no complaint of favoritism; the user of public property as a place of business, by being charged just what his space and location is worth, is at no advantage in competing with others who conduct their business on private property. Into the rent which a business conducted on private property must pay, taxation charges enter. The municipality which leases out

space for a store in a city-owned structure does not have to consider taxation among its costs, but it does not for that reason reduce the rental of its tenant by that amount. Instead it fixes the charge on a basis of parity with private property. This practice avoids discrimination as between businesses and protects the general taxpayer, by assuring him the highest possible return on all property built at his expense.

Such is sound governmental practice with reference to the use by private businesses of public buildings. How about the use by private individuals or firms of public facilities other than buildings? Should not sound public policy require such private enterprise also to pay the full economic value of such facilities to them? Should not the costs of businesses conducted entirely on private property on which taxes must be paid serve as a criterion in determining a fair assessment to be levied on the businesses which conduct their operations on public property?

More specifically, should not highway and waterway transportation pay into the public treasury sums sufficient to cover the cost of all highway and waterway facilities publicly provided, *and in addition* a sum equal to what the taxation on such facilities would amount to if they were taxable. In other words, why should a business which happens to be a tenant of the government be charged rental on a basis differing from, and much lower than that which obtains for businesses conducted upon private property?—a reduction in rental which amounts virtually to a public subsidy.

A subsidy, while it may sometimes be desirable as a temporary expedient, is usually the negation of economy and efficiency and needs the strongest justification in a national economic plan which makes any pretence of promoting industrial efficiency. A subsidy tends to encourage waste. Is this waste beyond question more than compensated for by other advantages outside the realm of economics?—this is the question which the intelligent citizen must ask himself. Just how is the general welfare advanced when a ton of freight is moved by waterway or highway which would have moved by rail, if the waterway or highway rates were forced to include the *total cost* of the service as the rail rates have to?

The National Automobile Chamber of Commerce has recently issued an interesting booklet entitled **"Highway Tax Costs"** which states that 35 per cent of the total highway bill for 1927—$1,465,000,000—was paid by special motor vehicle taxes. Is there any real reason why this entire bill should not be paid by highway vehicles? Of course, most motor vehicles are private automobiles. However, since ownership of such vehicles is so widespread, there could be little difference to the ordinary citizen whether he paid his share of the bill directly as a user of the highways instead of having a part of it assessed on his real estate or added to his house rent. It is the intensive user of the highway—the commercial user—and not the private motorist who benefits largely by the present practice of charging most of the highway bills to the general taxpayer.

Advantages to Adjacent Property Owners

It may be argued that highway construction adds to the general welfare and to the value of adjacent property, so that general taxation and special assessments may be relied upon to cover a portion of the costs of such facilities. However, it should be borne in mind that motor vehicle taxation resembles a rental charge for the use of valuable public facilities and there is no reason in sound economics why such rental should not be on exactly the same basis as if these facilities were provided by private enterprise. To make such charges less constitutes a subsidy which places a premium upon inefficiency and waste. Railways certainly have conferred general benefits and definite increases in the value of adjacent property quite as much as have highways, yet they are not given the proceeds of general taxation or special assessments on surrounding property.

National economic life formerly hugged the shore line and the navigable rivers. The development of railways spread this development country-wide. Then came the automotive vehicle which filled in the interstices between the railways, and now there is easy intercommunication between practically all parts of the country. No intelligent person will decry the development of either of these more recent methods of transportation—the railway and the motor vehicle. Each agency of transportation has its place—a field within which it is by nature endowed as the most economical transportation medium. The national welfare demands that for each transportation task the most efficient agency be chosen. But the choice of a transportation agency is guided largely by rates. How can the shipper or the passenger choose the agency best suited by natural economic law for his particular transportation task when one form of transportation charges rates based on the total costs of the service while the other forms need consider but a portion of their costs in fixing rates?

To revert to the analogy of the public building: Can one not readily imagine what a scandal would arise if a municipality should lease store or office space charging only 35 per cent of the actual maintenance and interest costs of such facilities with no additional charge to cover putative taxes? In other words, what if municipalities should charge as rent in municipal property only about one-third of the going rate for similar locations in private property?

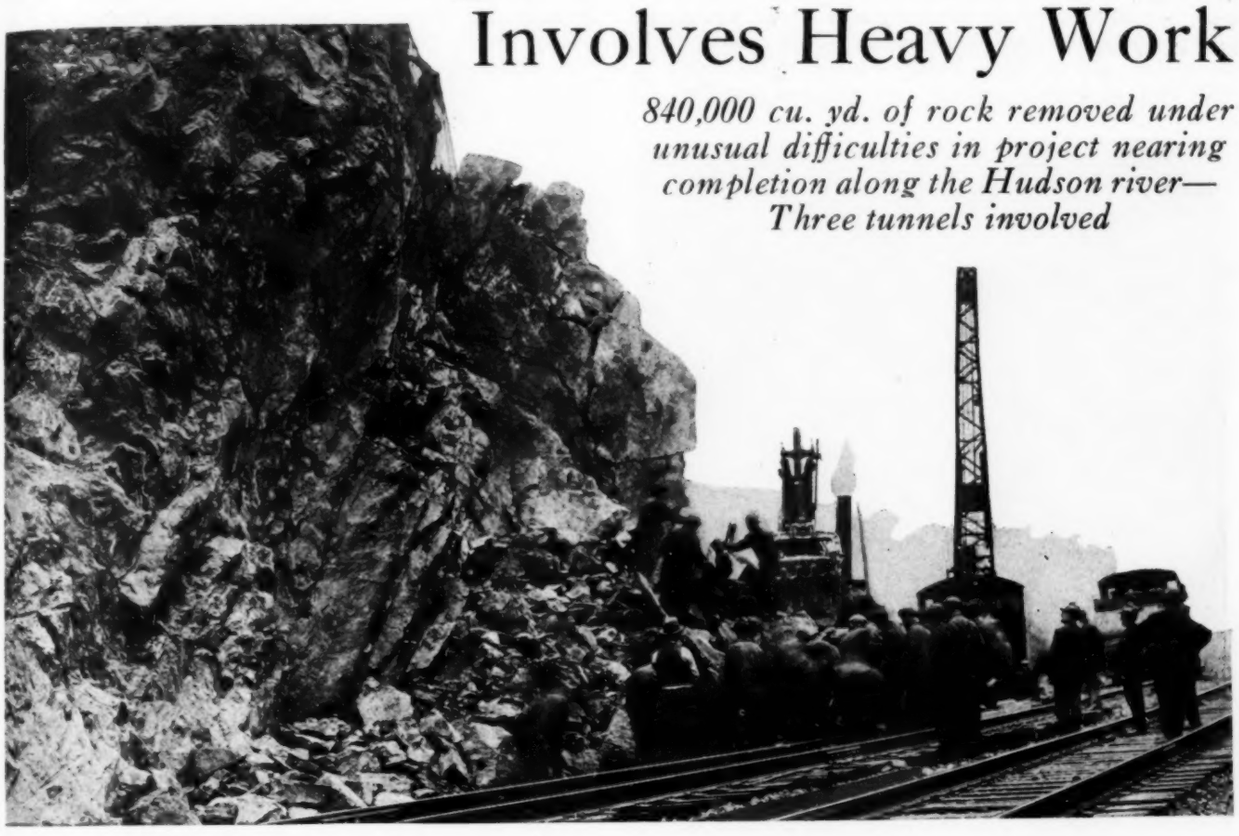
Cannot Highway Transport Pay Its Own Way?

From the N.A.C.C. booklet we take the figure $1,465,000,000 as the total actual expenditure on highways in 1927. The investment in rural highways has been estimated at approximately ten billion dollars. The railways were taxed $383,111,605 in 1927; assuming an investment in railways of 25 billions, then highways, to be placed on an equal basis, should be charged with two-fifths of the total of railway taxation or approximately $153,000,000. This sum, added to the figure of highway costs as shown by the N.A.C.C., gives a total of $1,618,000,000 as the cost of highways on a basis of private property. This sum, moreover, be it noted, makes no allowance for interest on that part of the investment in highways not covered by bonded debt—which interest would be a legitimate charge for privately-owned property. Compared with a fair rental basis of $1,618,000,000, highway vehicles, according to the N.A.C.C. figures, actually paid $516,000,000 in special taxes, or only 32 per cent.

It is possible that some considerations of public policy may require a subsidy of 68 per cent of the costs of providing rights-of-way for highway transportation, but just what they are is not clear. Certainly their effect has been to bring about the artificial diversion of a considerable volume of traffic from the railroads which must provide their own right-of-way and pay taxes upon it.

Four-Tracking on New York Central Involves Heavy Work

840,000 cu. yd. of rock removed under unusual difficulties in project nearing completion along the Hudson river—Three tunnels involved



Clearing Away a Heavy Rock Fall

EARLY in April the New York Central will complete about 10 miles of third and fourth track on its Hudson division between Albany, N. Y., and New York City, which comprises one of the most difficult and interesting projects of this character which has been carried on in recent years. This work, when completed, will involve the removal of about 840,000 cu. yd. of solid rock, will cost approximately $7,100,000, and will require the continuous operation of a force ranging from a few hundred to about one thousand men for practically 20 months. These figures do not indicate the full magnitude of the work however, because of the fact that at almost every turn, operations were severely handicapped by existing conditions.

In the first place, practically 800,000 cu. yd. of the excavation was from bold rock bluffs and ledges which towered as high as 110 ft. almost directly above the two existing main line tracks that carry all of the New York Central's high-speed passenger and freight traffic into New York City proper; and in the second place, approximately 40,000 cu. yd. of rock had to be removed in three tunnels, so close to main line operations that every phase of the work has had to be carried out under severe difficulties. This latter work included the driving of a new 540-ft. double-track tunnel through solid rock, and the enlarging of two other tunnels in rock for a total distance of 920 ft.

Throughout all of this work, there have been about 175 train movements past the operations each day. This heavy traffic not only required most elaborate precautionary measures, but made it necessary to adopt many unusual practices in order that the work could progress steadily and safely, without interference to the movement of trains. The success with which these special methods have been used is, in many respects, as significant as the magnitude of the work itself and the operating advantages which it will bring about.

Present Work Part of Large Project

In recent years, cramped by the two-track sections of its main line south of Albany, the New York Central has been extending its four-tracking. With the completion of the present work, the four-track territory on the Hudson division will extend continuously out of the Grand Central Terminal for approximately 95 miles, except for a gap of about seven miles between the south end of the present work and Peekskill, N. Y., and a gap of about eight miles between Chelsea and Poughkeepsie, N. Y. Both of these gaps have only two tracks and while their four-tracking will involve extremely heavy and costly rock excavation, it will, undoubtedly, be a matter of only a few years before this work is undertaken. In fact, plans have already been completed for the work involved in closing the gap between Chelsea and Poughkeepsie.

The four-track work which is now nearing completion lies along the rugged east bank of the Hudson river, beginning at a point about 1½ miles south of Garrison N. Y., and extending northward for about 10 miles through the towns of Cold Spring and Storm King, to a point about ½ mile south of Beacon, N. Y. In this territory, where certain improvements in line

as well as four-tracking were undertaken, the two original tracks followed the bank of the river closely, cutting across small bays and comparatively level land at a few places, but were pushed out close to the river's edge at many points by towering rock bluffs which rise almost vertically from the shoulder of the inside track. At certain points these barriers made it necessary to construct at least a part of the original roadbed on

Excavating in a Rock Bluff of 60 to 80 ft. Above the Tracks

rock fills extending into the river, and while these fills have been heavily protected by riprap, they have caused grave concern at times and have made these sections of track a constant source of heavy maintenance. The unstable character of the river fills has been in large measure due to the steep pitch of the natural slope of the rock underlying the river bank, which extends down to a great depth and is covered only with river silt and mud. In view of this condition, practically no new fills were made in the river in the present work, and, in spite of the additional excavation required, practically all of the old embankments in the river were abandoned and the tracks moved back on solid rock.

Work Extends Over Ten Miles

Beginning at the south end of the present project, the first work of any particular magnitude consisted of cutting into the mountain side through a distance of about 5,000 ft. to provide for the two additional tracks and to permit some straightening of the old alinement. In this section, known as the Ardenia and Beverly cuts, the excavation of the rock ledge extended to an average height of about 60 ft. and necessitated the removal of approximately 500,000 cu. yd. of material. Immediately north of this section, and through the town of Garrison, the work lightened somewhat, but just north of Garrison it was necessary to enlarge and line an old 470-ft. double-track tunnel which provided insufficient clearance for present day equipment and was unlined. This tunnel had been abandoned in 1922 when a deep rock cut about 800 ft. in length was excavated about 70 ft. east to carry main line traffic.

In providing this cut, unrestricted clearances were obtained in the open, making unnecessary the enlarging of the tunnel at that time, but in planning for the four tracks in the new work, it was decided to go back to the old tunnel and to rehabilitate it and its approaches. This would provide for two eastbound main tracks through the tunnel, in addition to the two main line tracks in the cut east of the tunnel, which could be used exclusively for westbound traffic. In carrying out this plan, the old rock tunnel was enlarged to 27 ft. high by 38 ft. wide, and was lined with concrete, the completed tunnel having a clear crown height of 22 ft. above the top of rail, and a base width of 33 ft. Other work in this vicinity included the removal of about 30,000 cu. yd. of rock from a high projecting bluff at the north end of the tunnel to improve the alinement of the approach tracks.

Immediately north of the Garrison tunnel, the plan for improved alinement made it necessary to cut back into the mountain side again to obtain the necessary width of roadbed. At this point, which is known as Ware cut, the rock was cut back a maximum distance of about 70 ft. and extended up an almost vertical face to heights ranging from 85 ft. to 110 ft. In this particular work, approximately 175,000 cu. yd. of solid rock was blasted away and removed. Beyond the Ware cut, two long sidings were rebuilt into standard main tracks and the widening then continued in more or less light cuts and fills until the vicinity of Cold Spring, where heavy rock excavation of considerable height was again encountered. This heavier work, which necessitated the removal of approximately 30,000 cu. yd. of material, continued in a succession of cuts for about one-half mile north of Cold Spring, and then ran out into territory where the land immediately adjoining the right-of-way was comparatively flat. In this territory excavation was relatively light, and such fills as were necessary were made from the rock excavation.

This condition prevailed practically up to Breakneck mountain at Storm King, at which point the old 540-ft. double-track tunnel through the mountain was enlarged and lined to carry two westbound tracks. Here also, a new 450-ft. tunnel was driven through the mountain to carry two eastbound tracks. This work, while not unusually extensive, was particularly difficult because of the unusual conditions prevailing and the special precautions which had to be employed.

Precautions Necessary in Widening Cuts

Excluding the excavation in the three tunnels, about 800,000 cu. yd. of rock has been broken down and removed in connection with the four-tracking work, and almost without exception, all of this excavation has been made under unusually difficult conditions. The main problem, and one which seemed almost insurmountable at first, was that of blasting away the high rock walls which closely confined the roadbed, without interfering with the schedules or jeopardizing the safety of about 175 trains passing directly alongside the operations each day. Extreme care was the only answer to this problem, and that such was taken in a most effective manner is evidenced by the fact that not a major accident or serious train delay was occasioned in all of the right-of-way widening work.

In carrying out this project, unusual precaution was taken to prevent falling rock from obstructing either of the main tracks. In preventing this, great care was exercised in determining the overburden, height, slope, stratification and type of rock to be removed, and furthermore, in placing the blasting holes and determining the amount of explosives to be loaded. In general, the blasting holes were spaced from 3 to 4 ft. apart, and

were drilled to depths of only 10 to 20 ft. Only enough dynamite was used in each case to dislodge the rock quietly, and in such a way that little secondary shooting would be required and that the rock would fall into the pit clear of the track where it could be picked up by steam shovels.

In no cases have the main tracks been allowed to become obstructed by the equipment or the forces carrying out the work, all blasting having been done in faces at right angles to the tracks, and all rock removal having been carried out on the new roadbed area created as the work progressed. Thus, the hazard of falling rock has been the only obstruction to train movements, and in minimizing this, all blasting operations have been carefully scheduled and all trains have been operated by the work under special orders.

In carrying out the rock excavation work, the major part of all drilling operations has been done during the night under powerful flood lights. All of the holes have been drilled pneumatically, drifters mounted on tripods having been used for all deep holes, and sinkers having been used for drilling the shallower holes. Air for the operation of these drills has been furnished from stationary plants equipped with one or more oil-engine compressors of large capacity.

Only Two Shots a Day

In the sections where the rock work has been immediately adjacent to the tracks, only two shots have been permitted each day, one in the early morning and the other about noon, times when there was the least interference to traffic. The first of these shots has been made in the section of the rock face furthest from the tracks, and the second in the section of the rock face close to the tracks. This arrangement of firing has tended to cause the rock dislodged by the second shot to fall toward the cavity away from the tracks, made by the shot earlier in the day. After each shot, an interval of from 20 to 30 minutes has been allowed for such secondary blasting and clearing of the tracks as has been necessary.

In the small amount of work still remaining, the operations are being carried out in the same manner as when the major part of the work was under way. Between blasting operations, all attention is turned to removing the loose rock brought down and in preparing for succeeding shots. Practically all of this work is being done by Bucyrus steam shovels, loading into side-dump cars, although at a few special points, a considerable portion of the rock has been removed in motor trucks. So confining is the area in which this work is being carried out, owing to the fact that all equipment has to be kept clear of the main tracks, that only one car of a work train can be brought near a shovel for loading at a time.

In each of the larger cuts, the shovel is served by two loading tracks, side by side, which are kept close behind it. While loading is under way, a train of 12-yd.

Looking Through the Enlarged and Lined Garrison Tunnel

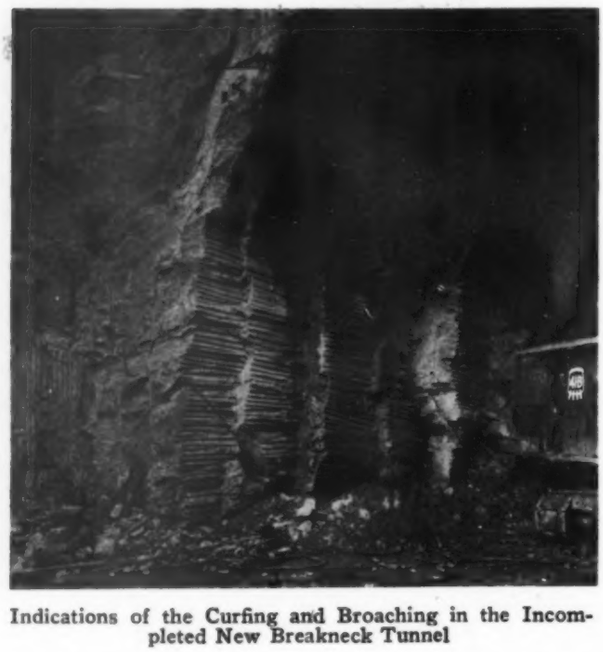
Western dump cars stands on each of these tracks, backed up to the shovel, and when the rear car of one of the trains is loaded, loading operations are shifted to the end car of the other train and the loaded car is pulled forward and set out in a train of loads being made up. Returning to the shovel, the next car in the train of empties is set in place for loading. In this way loading alternates from the end car of one train to the end car of the other, without delay to the shovel. This operation is practically continuous, as locomotives, other than those handling the empties at the shovel, are used to haul the trains of loads to the waste banks, and to return the empties to the cuts.

With the exception of a relatively small amount of rock used for widening the fills across various bays between Beacon and Garrison, and about 40,000 cu. yd. of surplus rock which was used by the railroad for riprapping and otherwise strengthening the shoulders of embankments at various points along the Hudson division, practically all of the rock excavated has been wasted in tiered banks up the hillsides adjacent to the

The New Breakneck Tunnel was Holed Through Directly Between the Old Tunnel and the Siphon Shaft House

work. For riprapping and shoulder strengthening, about one train load of rock has been handled each day, the train consisting of about twenty 30-yd. Clark dump cars.

Protection to traffic throughout the work has been afforded by conductors with dispatcher's phones, stationed opposite each steam shovel where any blasting was to be done, and by flagmen stationed about ½ mile each side of the work. After the time for a blast has been given, no trains are allowed to pass the nearest signal tower in either direction until it is certain that the tracks were clear and conditions safe, when the conductor notifies the dispatcher and the signal towers, and trains are allowed to proceed. At the long Beverly cut, temporary No. 18 crossovers, with automatic signals, were installed at each end, so that in the event that the track next to the work became blocked or for any reason became unsafe, westbound traffic could be diverted to the eastbound track past the work. In order to facilitate this operation, the signals were so arranged that trains could proceed over the crossovers without stopping.



Indications of the Curfing and Broaching in the Incompleted New Breakneck Tunnel

Tunnel Work Presented Difficulties

In the tunnel work, which has now been completed, all blasting operations have likewise had to be carried out with the greatest of care, this being true particularly in connection with the enlarging of the old tunnel and the driving of the new tunnel through Breakneck mountain just south of Storm King. In the case of the Garrison tunnel, precautions in blasting were necessary to avoid causing a break or slide in the deep rock cut on the main line only about 70 ft. to the east.

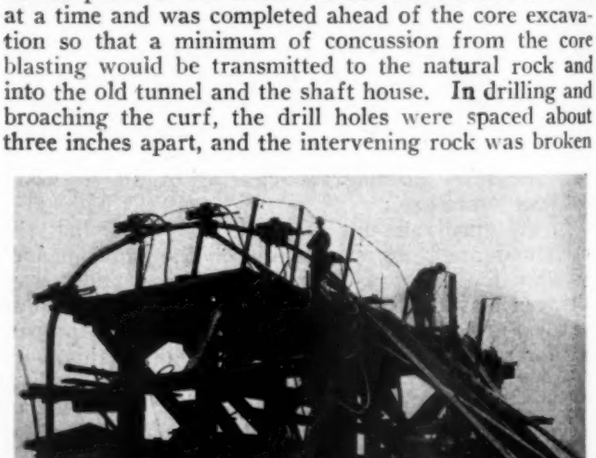
The work on the Garrison tunnel was one of enlarging the old bore, and in accomplishing this, practically all of the cutting was done under the arch and in the east wall. This was done to throw the center line of the tunnel further to the east, which reduced the curvature, and also the quantity of excavation in the tunnel approaches. In this tunnel, which is 470 ft. long, approximately 10,000 cu. yd. of rock were removed by drilling and light blasting. To minimize the shock from the blasting, ring holes were spaced three feet apart and only about ¾ lb. of explosive was used per cubic yard of rock excavated.

In order to facilitate the work in this tunnel, all of the drilling equipment was arranged on a heavy timber drill carriage which was mounted on a flat car. The drilling equipment itself included one stoper, which was used to drill the holes in the arch to points about 45 deg. each side of the crown point, and three drifters, which did all of the remaining drilling.

Drilling and Broaching Reduced Concussion

The enlarging of the 540-ft., double-track tunnel through Breakneck mountain was carried out in much the same manner as in the Garrison tunnel, but this was not undertaken until the new double-track tunnel beside it was put in service and the main line traffic diverted through it. While the enlarging of this tunnel necessitated great care, the most delicate work was encountered in driving the new tunnel, which was 450 ft. in length. This was owing to the fact that the new tunnel lies only about 30 ft. west of the old tunnel, and is itself flanked on the west by the east shaft house of the Hudson river syphon carrying the water supply of New York City from the Catskill mountains under the river at this point. Wedged between these two important structures, the work of driving the new tunnel had to proceed with unusual caution so as not to endanger or damage either of them.

In exercising this precaution, the entire contour of the new tunnel was drilled and broached, forming an outlining channel or curf between the natural rock and that to be removed in the tunnel excavation. This particular phase of the work was advanced about six feet at a time and was completed ahead of the core excavation so that a minimum of concussion from the core blasting would be transmitted to the natural rock and into the old tunnel and the shaft house. In drilling and broaching the curf, the drill holes were spaced about three inches apart, and the intervening rock was broken down with an air-operated broaching tool which was 3 in. wide and 1⅛ in. thick. Each successive curfing operation extended forward in the tunnel heading sufficiently to permit the breaking down of about six feet of rock at a round.



The Special Drill Carriage Used So Effectively in the New Breakneck Tunnel

In each round of drilling in the tunnel, about 330 holes were required, representing a total linear footage of approximately 4,000 ft. Wet drilling was used throughout this tunnel, the water tubes being withdrawn only during broaching operations, and from one to six

delay explosions were used in blasting to minimize the shock.

Special Drill Carriages Facilitated Drilling

In order to expedite the extensive drilling in connection with the new tunnel, two specially equipped drill carriages were constructed, each mounted on a flat car. The principal feature of these carriages was the frame which carried the curfing drills. This was made up of a 4½-in. pipe, bent to conform with the contour of the tunnel and suitably braced against the floor of the car. From 6 to 14 drills were mounted on this frame for simultaneous operation, and these drills were so fastened that they could be moved readily from one position to another.

In addition to this frame, each carriage also provided two horizontal pipe columns for supporting the drills used in driving the center heading in doing the radial drilling.

With this equipment, all drills could be removed from the heading at one time, and could be put back at work in the tunnel immediately after mucking operations were completed, thus saving the large amount of time which would have been required ordinarily for removing and resetting all of the drills individually.

Air for the operation of all of the drills used in the south heading of the new Breakneck tunnel was furnished by three Ingersoll Rand oil-engine air compressors, with a combined capacity of 1,500 cu. ft. of air per minute, which were housed in a compressor plant adjacent to the south portal. This plant also furnished air to the drills operated in the north heading, the air being carried to the north end of the new tunnel through pipes laid in the old tunnel. At each end, the air was delivered to a single reservoir mounted on the drill carriage, and from this reservoir passed into a manifold equipped with a sufficient number of outlets to feed all of the drills.

All Tunnels Were Lined

All three of the tunnels on the new four-tracking work are lined with concrete and are similar in section, having a maximum width of 33 ft. and a crown height of 22 ft. above the top of rail. In the lining work, which was similar in each case, two portable form carriages were used, operating on temporary tracks, one carrying arch forms and the other forms for the side walls. In both cases the forms were of wood and were hung on the carriage frames so that they could be moved inward from the neat line of the lining when it was desired to move them forward to a new position. In order to insure a true alinement and contour of the lining without the necessity for constant engineering assistance or for keeping the form carriage tracks in true surface, the first six inches of the side walls of the tunnels were constructed integral with the wall foundations at the time they were put in place. This provided an accurate gage for securing the true alinement and proper elevation of the side wall forms as they were moved forward in the tunnel lining work, and resulted in the saving of considerable time and expense in resetting the forms.

Throughout the work of lining the tunnels, 24 linear ft. of the arch and side walls were poured on alternate days, the wall lining work always being kept in advance of the arch lining. All of the concrete in the tunnel linings was placed pneumatically by a Ransome pneumatic concrete gun, which operated at a pressure of 100 lb. and delivered 14 cu.ft. of concrete in a batch. This gun was charged from a ½-yd. concrete cart with a track mounting, which conveyed the concrete from the mixing plant set up near each tunnel. In all of the tunnel lining work, about 10 cu. yd. of concrete was required per linear foot, which necessitated the placing of a total of approximately 15,000 cu. yd. of concrete in all three tunnels.

In addition to the more difficult and interesting work already described, a considerable amount of auxiliary work was involved in the four-tracking between Beacon and Garrison, which, in addition to the laying and surfacing of about 20 miles of main tracks, included

The Special Arch Concrete Form Used in Lining the Three Tunnels

such items as the moving of existing passenger and freight facilities at certain points, the rebuilding of highway and railroad bridges to meet the new conditions, and the installation of a complete new signal system employing color-light signals and two-track cantilever signal bridges.

With all of its exacting and difficult phases, one of the outstanding features of the four-tracking project is the facility with which the work has been carried out. Without question, this has been due in large measure to the adequate and up-to-date equipment which has been employed by the contractor on all parts of the work.

All of the work was planned and has been carried out under the general direction of F. B. Freeman and J. W. Pfau, chief engineer and assistant chief engineer respectively of the New York Central, Buffalo and East, and under the direct supervision of A. D. Duffie, district engineer, who is represented on the work by T. P. Lynch, resident engineer. The Walsh Construction Company, Davenport, Iowa, has done all of the work, including the track laying, under the direction of H. C. Kahl, vice-president of that company.

* * *

On the D. & R. G. W. at Denver, Colo.

Proceedings to Adjust Nor. Pac. Land Grant Proposed

WASHINGTON, D. C.

THE Joint Congressional Committee appointed in 1924 to investigate the Northern Pacific land grants, the adjustment of which is in dispute, on February 21 submitted to both houses of Congress a report recommending the passage of a bill directing the Attorney General to institute proceedings in court to procure a final and complete determination of the respective rights of the United States and the railway company. The bill was introduced in the Senate as S. 5855 and in the House at H. R. 17,212.

The provisions of the bill are summarized, in general as follows:

By the first section all lands, surveyed or unsurveyed, within the indemnity limits of the grants and within the exterior boundaries of national forest and other Government reservations are removed from the operation of the land grants and retained by the United States as part of the reservations within which they are situate, relieved and freed from all claims, if any exist, which the Northern Pacific Railroad or its successor, the Northern Pacific Railway, may have to acquire them as indemnity selections or otherwise, and provision is made that the railroad company or its successor shall be entitled to be compensated to the extent and in the amounts, if any, the courts hold compensation is due.

By section 2 all the unsatisfied indemnity selection rights, if any exist, claimed by the company, or its successor, together with all claims to additional lands by virtue of the grants, are declared forfeited. (The committee having considered all the facts and circumstances believes that this limited forfeiture is justified.)

Section 3 retains for the United States the right to enact additional legislation on the subject.

Section 4 provides that the act shall not be construed as affecting the present title of the company or its successors in the right of way acquired under the grants, or lands actually used in good faith by the Northern Pacific in the operation of its road such as lands used for depots, station buildings, workshops, machine shops, switches, sidetracks, and water stations.

Section 5 directs the Attorney General to institute proceedings to accomplish the objects mentioned therein and in the act in its entirety.

Section 6 requires that an accounting be had and authorizes the rendering of such judgments and decrees as law and equity may require.

Section 7 relates to the fixing of jurisdiction and to matters of procedure.

Section 8 makes it the duty of the Attorney General to report to Congress any final determinations rendered in the proceedings and requires the Attorney General, the Secretary of the Interior, and the Secretary of Agriculture to submit to Congress such recommendations for the enactment of legislation, if any, as they deem desirable in the interests of the United States in connection with the execution of said judgments and decrees or otherwise.

By Section 9 the Secretary of the Interior is directed to withhold his approval of the adjustment of the grants and related acts, and to withhold the issuance of further patents or muniments of title under the grants, and under acts supplemental thereto until the proceedings contemplated by this act have been fully determined, provided that the act shall not prevent the adjudication of any claims arising under the public land laws where the claimants are not seeking title thereto under the grants of the Northern Pacific Railroad Company or its successor, or under any acts in modification thereof or supplemental thereto.

On February 23, 1924, President Coolidge called the attention of the chairman of the public lands committee of the house to the fact that the Northern Pacific was asserting claims to large areas of valuable timberland within the national forests to satisfy a claimed deficiency in the land grant made by the act of July 2, 1864 and the joint resolution of May 31, 1870; that the loss of public title to resources which had been protected and developed for many years at public cost was threatened, and that the grants had not been fully adjusted. The President advised that certain statements contained in a letter from the Secretary of Agriculture raised serious questions as to the extent to which the railroad company may have obtained undue benefits from the grant and also as to the extent of its compliance with the obligations imposed upon it by the legislation which conferred the grants. He further stated that he believed these questions should be fully determined before a final settlement of the matter is effected and before further public lands were patented to the company, and recommended that the entire matter receive the attention of Congress, and that such action be taken as would look to the fullest protection of the public interests concerned.

After preliminary hearings, held by the public lands committee of the House, Congress adopted the resolution approved June 5, 1924 by virtue of which the joint committee was appointed.

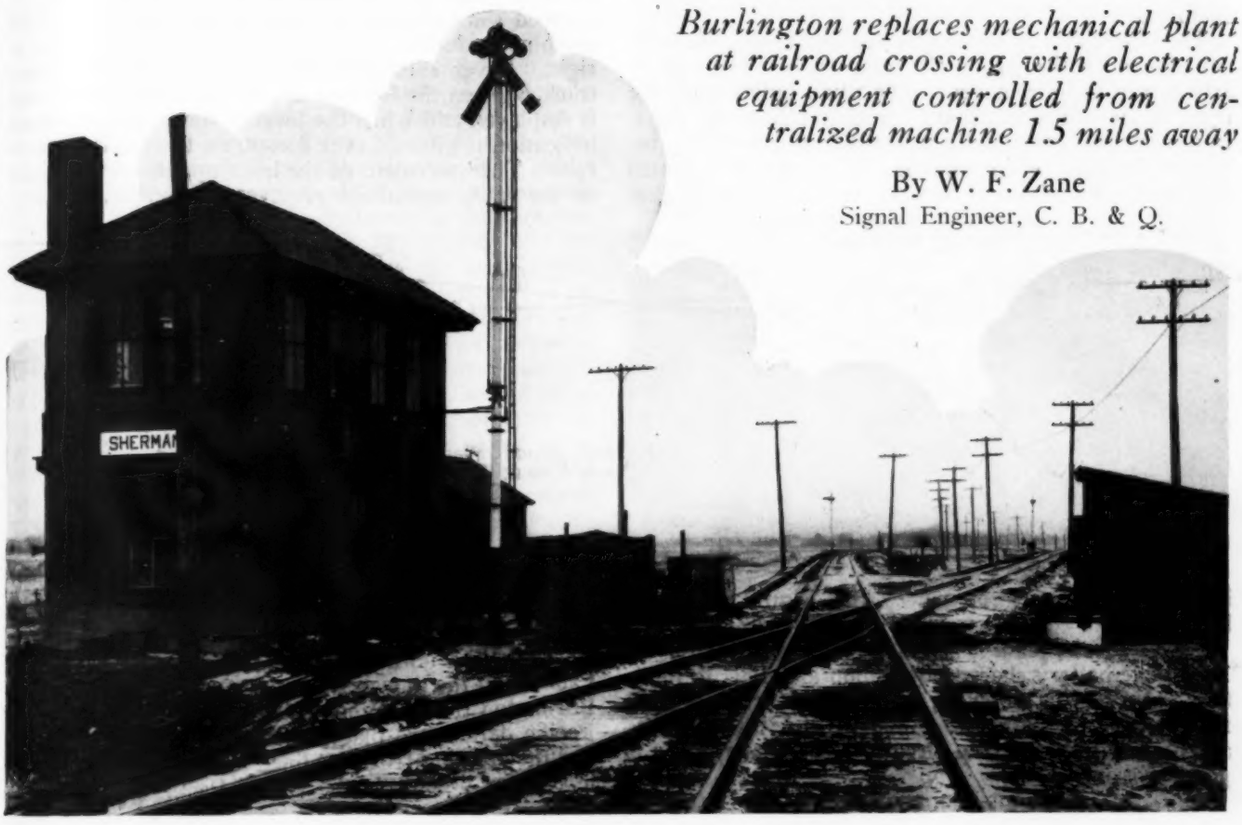
Extensive hearings have been had, at which representatives of the Department of Agriculture, the Department of the Interior, and the Northern Pacific were present. Ninety-four days of hearings have been held and proceedings covering over 5,500 pages have been printed.

"The record shows," the committee says in its report, "that by the act of July 2, 1864, and the resolution of May 31, 1870, a vast area of the public domain was granted to the Northern Pacific Railroad Co., to aid in the construction of a railroad and telegraph line from Lake Superior to Puget Sound; that the grants contain certain terms, conditions, and covenants imposing certain obligations upon the United States and upon the company; that these obligations have not been fully complied with by the company; that the company has already received upward of 35,000,000 acres of land under the grants concerning part of which controversies have arisen; that questions of fact and of law have arisen from time to time in the administration of the grants; that the Northern Pacific Railway Co., now claims that a large deficiency in the grants still exists, and further claims the right to satisfy the deficiency by the selection of lands within national forests and other Government reservations within the indemnity limits of the grants; that large sums of public money have been expended during the past 25 years on the lands within these national forests and other Government reservations which lands the company claims the right to select; that the public interests require that these lands be retained by the United States; that it is desirable that a speedy and final adjustment of the grants be had; that the decision of the courts be obtained on the controverted questions of law and fact, and that the respective rights of the United States and the Northern Pacific Railroad Co., and/or its successor, the Northern Pacific Railway Co., be fully and finally established."

Controlling an Interlocking from a Remote Point

Burlington replaces mechanical plant at railroad crossing with electrical equipment controlled from centralized machine 1.5 miles away

By W. F. Zane
Signal Engineer, C. B. & Q.



Tower Building and All Mechanical Fittings Will Be Removed Shortly— New Remote Control Facilities Are Housed in Wooden Shelter at the Right

THE first application of the centralized dispatcher system for the remote control of an entire interlocking plant was placed in service on February 14, by the Chicago, Burlington & Quincy at Lincoln, Neb., where a mechanical interlocking, known as the Sherman plant, at the crossing of two single-track lines, was replaced by an all-electric low-voltage plant, the control machine for which is located in the tower of another interlocking at Hall street, about 1.5 miles away. This new arrangement completes the program of consolidation of control facilities west of the Lincoln passenger station, as the Hall tower also controls the layout at Cobb Junction, 7 miles west on the main line to Denver, Colo.

The Sherman plant protects the crossing of the single-track main line of the Burlington running from Lincoln to Billings, Mont., with the single-track main line of the Union Pacific between Valley, Neb., and Manhattan, Kan. The Burlington grade is 0.2 per cent eastbound and that of the Union Pacific is approximately the same. The two lines cross at an angle of 8 deg. 10 min., which requires the inclusion of crossing frogs with movable points in the interlocking. Complete derail protection is provided, the Burlington using the Wharton lift type and the Union Pacific the split-point type, all for 90-lb. rail.

The Burlington operates eight passenger and about five freight trains while the Union Pacific operates six passenger and about nine freight trains through this plant in both directions daily. In addition, both roads run numerous extras at times.

Economy Derived by New Installation

The mechanical plant, which was constructed in 1911, was of the Saxby & Farmer type, equipped with electric route locking. The operation of this plant required three levermen, one for each trick. The new remotely-controlled electric plant was installed to eliminate the wages of levermen as shown in detail in the table.

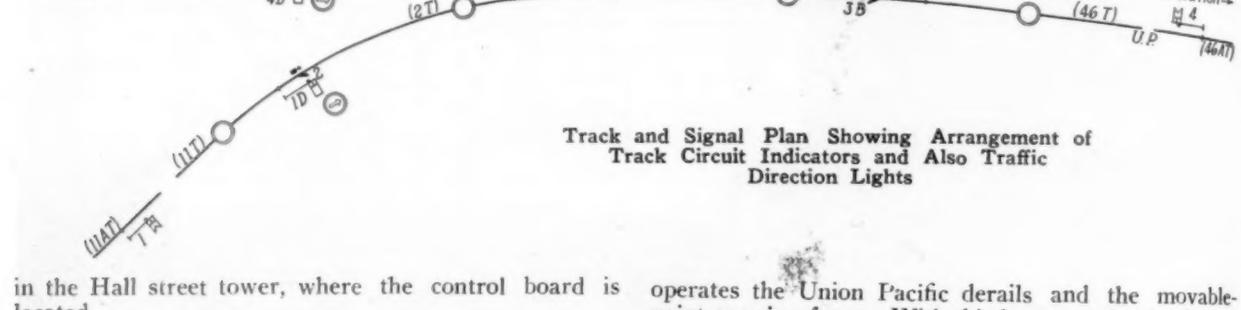
Cost of Maintenance and Operation—Old Plant		
Three levermen at 55 cents per hour	$4,818.00	
Maintenance and material	125.00	
Operating material and supplies	60.00	
Maintenance labor	225.00	
Interest, depreciation, taxes, etc., at 10 per cent on $14,200	1,420.00	$6,648.00
Cost of Maintenance and Operation—New Plant		
Maintenance material	$ 200.00	
Operating supplies and electric current	60.00	
Maintenance labor	225.00	
Interest, depreciation, taxes, etc., at 10 per cent on $17,664	1,766.45	$2,251.45
Total Net Annual Saving		$4,396.55

Field Apparatus

The apparatus used in this installation is in accordance with C. B. & Q. specifications. The General

Railway Signal Company furnished the major portion of the new equipment, including five Model-5A low-voltage switch machines, five independent dual-control machines, and other material necessary to install and operate the latest type of dispatching directional control circuits. The signals are of the lower-quadrant semaphore type, using Model-4 top-post Federal mechanisms.

The old brick interlocking tower and train order signal, shown on the left in the view at the head of this article, are to be removed. The small building on the right is the equipment house which contains the apparatus for the control of the new plant, and in reality becomes the interlocking station. A telephone mounted on the right-hand side, connects with the loud speaker in the Hall street tower, where the control board is located.



Track and Signal Plan Showing Arrangement of Track Circuit Indicators and Also Traffic Direction Lights

Power for the plant is supplied from an Exide KXH-11 storage battery charged by Union and Balkite rectifiers. A 220-volt, 60-cycle, single-phase circuit is used for charging the batteries. Standard d-c. track circuits are used with short trap circuits through the movable point crossing.

Line Construction

Through the elimination of mechanical locking on the machine and the placing of the locking in the field, it was possible to reduce the number of wires so as to use a seven-conductor No. 16 gage assembled aerial braided cable, made according to C. B. & Q. specifications. This cable is suspended on a messenger wire in cable rings and extends continuously from the Hall tower to the equipment house at the Sherman crossing. The track wires are of No. 8 gage, assembled in standard parkway cable with lead and steel armor, as manufactured by the Okonite Company. The motor circuits extend from the central location to the several switch machines in parkway cable; No. 6 conductors used.

Control Machine Located in Hall Tower

The control machine, located in the Hall tower, is the General Railway Signal Company dispatcher type, revamped somewhat to fit interlocking conditions. This machine includes four levers, numbered from left to right. Lever *1* controls the signals on the Burlington track. When the lever is up, the westbound indication is displayed and when the lever is down, the eastbound indication is given. Lever *2* controls the Burlington derails. The movement of the lever up, places the derails on the track, and down removes the derails. Lever *3* operates the Union Pacific derails and the movable-point crossing frogs. With this lever up, the derails are placed in the normal derailing position on the Union Pacific and the movable crossing frogs are lined for the Burlington track. When this lever is down, the Union Pacific derails are placed in the non-derailing position and the crossing frogs are lined up for the Union Pacific. Lever *4* controls the Union Pacific signals. With the lever in the up-position, a northbound indication is given, while with the lever down a southbound indication is displayed.

Operation of the Plant

The unique feature of this installation is the fact that the entire interlocking is accomplished between functions in the field rather than through the agency of the control levers in the machine. The signal levers are operated to three positions, the center position causing all signals controlled by that lever to show their most

Crossing Frogs with Movable Points Are Operated by a Model-5A Switch Machine Equipped with a Dual-Selector Mechanism

restrictive indication. The distant signals are controlled by the home signals.

Complete indications are given on the control machine. A green light, located just above each of the derail levers, flashes when the derail starts to operate and again when it has completed its operation and is locked in either position. The illuminated diagram, shown on the top of the machine, contains approach annunciator lights of opal color, announcing the approach of a train from either direction on either railroad. Another opal light is also located on each track between the derails, which shows the occupancy of the plant, these lights burning steadily while trains are on the track circuit. Located near each signal on this diagram is a white light in the shape of an arrow, which burns continuously when the signal is clear and also points in the direction of traffic for that signal.

Levers *1* and *4* are kept normally in the central positions; levers *2* and *3* in the upward positions. This places all signals at stop and the derails in the derailing positions. As an example of the method of operating the plant, assume that a train is approaching Signal *1D* on the C. B. & Q. This is indicated by the sounding of a gong and the illumination of the light indicator located on this section of track on the model board. The indicator is illuminated when the track section in the rear of the distant signal becomes occupied and remains lighted until the rear end of the train passes home Signal *1D*. To line up the route for the train approaching Signal *1D*, the operator places Levers *1* and *2* in the downward position, which clears Derails *2* and *2A*, home Signal *1D* and the distant signal on the C. B. & Q.

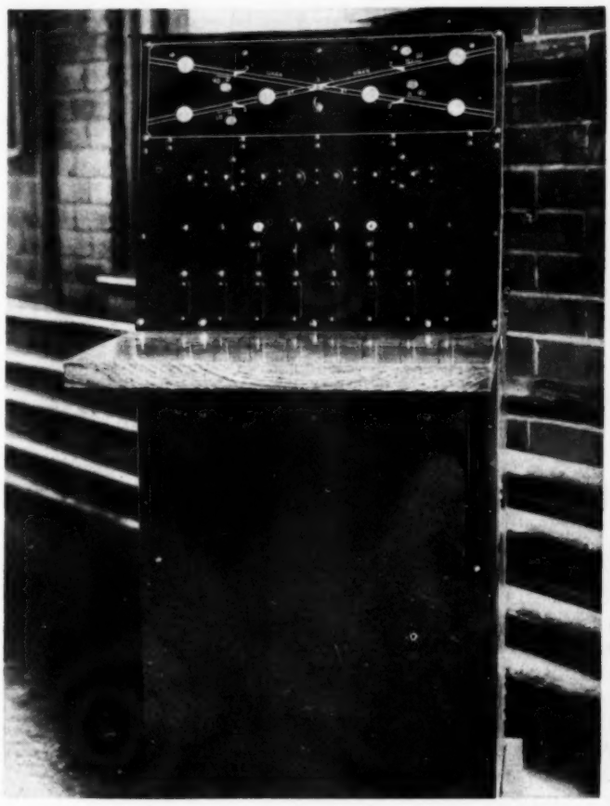
The light indicator above Lever *2* flashes and a gong sounds when the switch machines at the derails start to move and again when the movements are completed. When Signal *1D* operates to its proceed position, the small light indicator, located near this signal on the track model, displays an illuminated arrow pointing in the direction of the train movement. When the train passes to track section *2T*, which extends between the home signals on the C. B. & Q., the gong sounds and the light indicator on the track model for this section is illuminated and remains lighted until the train passes off of this section.

For a train movement in the opposite direction on the C. B. & Q., the operator places Lever *2* downward and Lever *1* upward, which clears Derails *2* and *2A*, Signal *1U* and its distant signal. The derails, movable-point frog and signals on the U. P. are operated in the same manner by Levers *3* and *4*.

Interlocking Accomplished Locally

All the functions are interlocked electrically with each other so that none will respond to the lever movement unless conditions are proper for the operation of that function. The operator is free to manipulate the levers at any time and in any sequence that he chooses, but he cannot set up an unsafe condition.

Derails *2* and *2A* on the C. B. & Q. cannot be operated unless all of the home signals are at stop, unless Derails *3* and *3B* on the U. P. are in their derailing positions and unless movable-point frog *3A* is in its normal position. Likewise, Derails *3* and *3B* and movable-point frog *3A* cannot be operated unless all home signals are at stop and unless Derails *2* and *2A* are in their derailing positions. The home signals are controlled through all four derails, the movable-point frog, and the opposing signals. For example, before Signal *1D* can be cleared, Derails *2* and *2A* must be clear, movable-point frog *3A* must be normal, Derails *3* and *3B* must be in their derailing positions, and the opposing Signal *1U* must be at stop.



Control Machine Located in Hall Street Interlocker 1.5 Mi. Away from Sherman Crossing

When a route has been lined up and a proceed signal displayed, the derails on this route cannot be operated after a train has entered the approach section to the distant signal until the home signal has been placed at stop and has remained in that position for a period of two minutes. During this time interval the train will have stopped at the home signal or will have passed on to the detector circuit, which prevents the operation of derails until the train has passed over the route. This is the same kind of approach and detector locking protection that is usually provided at interlocking plants, but it is secured directly through the circuits at the crossing, rather than through the control machine.

Results Are Satisfactory

The economy of operating the protection at a crossing of this kind from a location where an operator is required for other duties is self-evident, no facilities or protection being sacrificed that a regular interlocking plant affords; yet the cost of installation compares favorably with that of any type of electric plant handled directly by individual levermen. The maintenance should be no more costly than on any type of electrical equipment as it is planned to utilize the same maintenance force to maintain this plant that has been maintaining Hall tower and the old mechanical plant. This maintenance force consists of one maintainer and one assistant maintainer, working eight hours a day and subject to night calls.

An added advantage of this type of interlocking is the speed with which routes can be lined and traffic handled. The operation of the switch machine (timer on the ground) shows that the four movable points at

the crossing can be operated in 14 sec. in spite of the fact that the points are short and of heavy rail, which operates rather stiffly. The derails operate in 11 sec., which is fast enough for this type of plant.

This is a joint plant with the Union Pacific, as is also the electric interlocker at Hall tower where the control board is located. As all trains operating on these lines of the Burlington and the Union Pacific pass through both plants, it is evident that one set of operators is ably adapted to handle both plants. Hence, it is expected that greater efficiency and economy will result than what is shown merely by the elimination of the levermen at Sherman tower.

I.C.C. Replies to Governor Reed

CHAIRMAN LEWIS of the Interstate Commerce Commission has sent to the Senate committee on interstate commerce a statement prepared by Commissioner B. H. Meyer in reply to the statement made before the committee on February 1 by Governor Clyde M. Reed, of Kansas, in support of the Capper resolution to direct the commission to adjust rates on export grain and grain products on a basis that will permit such products to move as freely as such products in Canada "so far as such rates may be lawfully applied." In reply to criticisms of the commission's procedure under the Hoch-Smith resolution Commissioner Meyer gives a comprehensive outline of what the commission has done in compliance with it and he also replies to what he terms "the very unfair criticisms" of the commission's reports to the Senate relating to rates in Canada. Governor Reed's statement was reported in part in the *Railway Age* of February 9.

As to Governor Reed's objection because the commission took evidence as to the economic condition of any branch of agriculture, instead of being governed by the Congressional reference to the "existing depression" in agriculture in 1925, Commissioner Meyer said the idea that the commission must assume depression in every branch of agriculture "impresses me as being neither good sense, nor justice, nor law." An abstract of the statement follows:

Chairman Lewis' Statement

At the outset I wish to present a brief chronological review of our admistration of the Hoch-Smith resolution, in reply to criticisms recently made before this committee.

It became law on January 30, 1925. On February 2, 1925, we appointed a committee of our most experienced experts to consider procedure under it. This committee was enlarged 10 days later with instructions to study existing rates and revenues from the standpoint of the resolutions. On April 7, 1925, we created a special division of the commission, designated division 6, to direct the further activities of our committee of employees and to take administrative charge of all proceedings in the general investigations under the resolution, docketed as No. 17000. Still later one of our most experienced examiners was appointed an assistant chief examiner to assist division 6 in directing proceedings in docket No. 17000. The first general order in No. 17000, called rate structure investigation, was entered on March 12, 1925. We advised Congress, of our activities under the resolution in our thirty-ninth annual report, 1925; in our annual report for 1926, 1927, 1928.

Since the passage of the resolution we have had to dispose of about 3,500 formal rate cases in addition to many thousands of other formal and informal proceedings. Parties interested in these cases had their rights under the law and it was our duty to attend to their complaints as efficiently as possible. We have not understood that the resolution authorizes us to postpone work in connection with and in consideration of the thousands of matters that the citizens of this country have been accustomed to bring to us. We have given reasonable preference to cases involving agriculture products and cases affecting agriculture. Of the 3,500 rate cases about one-third related to products of agriculture. Of this one-third, 529 have been individually classified as follows:

Grain and grain products	237
Livestock	38
Vegetables	52
Cotton	44
Cotton linters	20
Cottonseed products	55
Apples	35
Fruits in general	48
Total	529

All the cases disposed of might have been classified, but I did not feel justified in spending the time and money necessary to do it. Since its passage all of our rate cases have been decided in the atmosphere created by the resolution. We have exerted a steady pressure to confine rates on agricultural products which are depressed within the lower belts of the larger zone of reasonableness while the pressure has been equally constant not to restrain unduly the maintenance of rates in the higher belts of the zone of reasonableness for those commodities which are not depressd and which possess a greater ability to bear a higher rate. It is immaterial whether we mention the resolution in a particular report or not. It is there just the same like every other provision of the interstate commerce act. It operates on every case which is brought before us. It is utterly incorrect to assume that the resolution was considered by us only in those cases in which we specifically mention it or only in the larger proceedings conducted expressly under it. Furthermore, Governor Reed apparently thinks that the growers of such products as citrus fruits and peaches are less entitled to consideration than the growers of other agricultural products. We find nothing in the Hoch-Smith resolution or in the interstate commerce act to justify such suggestions.

Grain Investigations

You were told much relating to the grain investigation. It is known as Docket No. 17000, part 7. To begin with, this is not an investigation in the ordinary sense of the word.

Twenty-two special complaints have been consolidated with it. It is a huge bundle of cases covering the entire Western territory, for domestic, and the whole country for export rates. You directed us to investigate the rate structure of the country and we are doing it as expeditiously as possible. In the grain investigation hearings were continued through a period of nearly 18 months with only relatively short intermissions. Sessions were held six hours a day for weeks and months at a time. I do not believe that a single person can be found who stood in a relation of responsibility in connection with that proceeding who will not be willing to say that the greatest possible speed was maintained. It taxed the energy and endurance of every man connected with it and it exceeded the endurance of many of them. As of December 31, 1928, there were filed 95 briefs, aggregating over 10,000 pages. Reply briefs were due February 15. Those briefs deal with a record of over 53,000 pages of testimony and more than 2,000 exhibits, which embody the facts for a complete study of the grain rate structure throughout the Western district; and so far as export rates are concerned, throughout the United States.

Illustrative of our efforts to expedite the hearing and save time and money for all interested parties, our plan for inviting independent witnesses should be mentioned.

After Governor Reed had presented a series of 40 Kansas witnesses, and the carriers had presented 20 in rebuttal, I was much concerned for fear that in every other State similar presentations should be attempted which would greatly extend the time required for the hearing. I could not face with equanimity the prospect of 60 witnesses from each of the remaining dozen or more grain States. In the hope of preventing such a development I thought of a plan of inviting qualified men, independent and free from political entanglements, to testify on behalf of the commission. I submitted the plan to my associates who promptly and unanimously approved it.

* * *

Each commission responded prompty, and in each case the person nominated was invited to testify and the invitation was accepted. The expenses of all these independent witnesses who desired us to do so were paid out of the Federal Treasury. In addition I conferred with the Secretary of Agriculture and the Secretary of the Treasury with a view of having them nominate certain individuals who might sub-

mit similar evidence. Each department most willingly co-operated. We had the benefit of the evidence of officials in Federal Reserve and land banks, the Federal Reserve Board, and the Department of Agriculture. However, even though these independent witnesses were eminently qualified and generally submitted impartial evidence in their respective fields, in many instances the State authorities and farm organizations felt that additional witnesses should testify on their behalf. I did not feel that I could properly deny these requests. Practically every witness promised to be as brief as possible. The total number of independent witnesses invited by us was 15. This expresses my idea of what was necessary. The number of additional witnesses called on behalf of the respective States and organizations was 88. Please bear in mind that these additional witnesses were not required by us, although we gladly accorded them the opportunity of making their contributions to the record. We have not the slighest criticism against the presentation of these additional witnesses. We recognize the right and duty of the State authorities to meet their responsibilities in a manner most satisfactory to themselves. But the fact deserves emphasis that these additional witnesses appeared, not because we required them to come, but because they wanted to come. I should be glad to have direct testimony regarding the condition of agriculture in future cases limited as nearly as possible to witnesses representing the Federal and State departments of agriculture and State commissions, because these authorities can speak for our great unorganized agricultural industries just as other spokesmen voice the views of better organized industries. This would also tend to limit the number of rebuttal witnesses.

Neither Good Sense, Nor Justice

However, the commission can not properly say to one man that it will hear him and to another that it will not hear him. The right to be heard is fundamental. It has always been our policy to grant a full hearing and to hear everyone who wishes to be heard and who fairly places himself within the scope of the proceeding. But Governor Reed goes beyond such considerations. He apparently advocates exclusion of evidence relating to the economic condition of any branch of agriculture for the reason, as he seems to think that we must assume depression in every branch of agriculture as long as the third paragraph of the resolution stands upon the books. This impresses me as being neither good sense, nor justice, nor law.

It is the law of the land that we can act lawfully only on the facts of record. And can anyone question that this is right and just? Every person who may be affected by an order to be issued by the Interstate Commerce Commission is entitled to know upon what facts and allegations such an order is based and therefore a fair opportunity to meet those facts and allegations in a properly conducted public hearing.

Governor Reed complained to this committee because the grain investigation was not separated into parts. He said, "I was spokesman for the group that asked to have the case separated, etc." If this language suggests to the Senators that request was made of the Interstate Commerce Commission and the Interstate Commerce Commission did not comply with the request, I wish to inform you that such understanding is not correct. . . . However, I do not wish to have any Senator infer that if the request had been formally presented on the record we would have acted favorably upon it. It is mere speculation to attempt to say what we might have done. But I should add that prior to the first hearing during May, 1927, the western trunk lines formally petitioned the commission to remove western-trunk-line territory from the scope of the investigation. This petition was denied. Any matter connected with a proceeding that anyone thinks is of sufficient importance later to come to the Senate committee to complain about should certainly have been presented through a formal petition or motion upon the record, so that all the interested parties might have been advised and given an opportunity to be heard upon it and a decision announced upon the record in the usual way.

The conduct of the grain investigation was further criticized before this committee because I permitted the grain markets to present evidence. They were there from the beginning to the end. So were the railroads, the producers, the millers, and others. They all had a right to be there. It is a serious mistake to assume that the producers of grain have no interest in the grain markets. No one has a greater interest in the proper functioning of these markets than they. An investigation of the grain rate structure involves rates into and out of the markets. These markets were represented by citizens of the United States who presumably have all the rights and privileges of other citizens. One of these is to be accorded a full, fair, and impartial hearing. A rate structure which interferes with the free functioning of the markets probably in every case reacts unfavorably upon the producer. It is impossible to investigate the grain rate structure and at the same time not to investigate it.

I can not pass without comment the very unfair criticisms of our reports in response to Senate Resolutions 208 and 250, the former being known as Ex parte 92, and the latter as Ex parte 95. You were told that "the contents of these reports from the Interstate Commerce Commission applied to those railroads alone is technically correct, but even in the case of the Northwest railroads the Interstate Commerce Commission ignored some important factors that in all fairness to the people of this country should have been discussed in its report, for these factors are within the knowledge of that commission. . . .

The members of the committee will remember that in Senate Resolution 250, to which Ex parte 95 is responsive, we were asked to report whether rates similar to the Canadian rates would be reasonably compensatory if applied to "American railroads operating in that territory." The resolution designated the "Northwest" as "that territory." It dealt with northwestern railroads only and our answer was that they would not. We answered the questions which you asked and not some others. One reason given for our answer was that if "rates similar to the Canadian" rates had been applied to the movement of grain over the northwestern railroads during a given year the average net earnings of those railroads would have been reduced to approximately 3.5 per cent on a valuation arrived at by methods of the O'Fallon case. We were not asked what the effect of the application of Canadian rates might be on railroads in the Southwest or in any other section of the United States except the Northwest as defined in the resolution.

Land Grants, Subsidies and Taxes

You were also told that we should have reported regarding land grants and subsidies to railroads in the United States. Our answer is that you did not ask that question and we did not discuss land grants and subsidies in either Canada or the United States except as an incident to the very important agreement between the Canadian Pacific and the Dominion Government with reference to grain rates. The Crows Nest Pass agreement, the corner stone in the Canadian grain rate structure, rests entirely upon the subsidies referred to. That is the only but a sufficient reason for mentioning those particular subsidies and no others either in Canada or in the United States. The Government of the United States, for instance, has the benefit of reduced rates over certain railroads in the United States known as land-grant railroads. We said nothing about that. We did not think that information of that character was at all pertinent and therefore we made no reference either to it or to volumes of similar information that have been compiled on that subject.

We discussed taxes because they throw light on the relation of public authority in Canada to its railroads. We referred to what might be called subsidies in operation or the payment of deficits from operation out of the Dominion treasury. These references were made simply because they suggest important differences in the relation between the railroads and the Government in Canada and the United States, respectively, and which throw light on the low level of Canadian grain rates. We did not discuss the cost of fuel in Canada; nor did we discuss any other item in the operating expenses of railroads in Canada because the cost of operating Canadian railroads can be of no assistance to us in fixing grain rates on railroads in the United States. We have no authority to investigate operating expenses of railroads in Canada. However, as bearing on these items, I wish to point out an important sentence in our report which the governor forgot to bring to your attention. You will find it on page 8 of Senate Document 183. This sentence was put in for the precise purpose of covering items like fuel and density of traffic concerning which the governor had so much to say. It reads as follows:

"In connection with these tax comparisons it may be observed, as suggested in the preceding paragraph, that there may be off-setting differences in operating conditions, such as lower density of traffic, on Canadian railroads than on those in the United States."

Finally I would like to remark very briefly on Senate Joint Resolution 67, now pending before you. Our legislative committee sent you a report on this resolution dated May 8, 1928. We adhere to the views there expressed. However, if Congress should deem it necessary to pass this joint resolution it should so far as possible define the meaning of the expression, lines 9 and 10 on page 2, "to move as freely as grain and grain products produced in the Dominion of Canada,

etc." In other words, if possible, it would be desirable to incorporate in the resolution your legislative standard of freedom of movement. Furthermore, if a question of fact should be raised regarding freedom of movement of grain and grain products in the United States as compared with Canada, which is certain to be the case, we should be given authority to invite citizens of Canada to come to some point in the United States to submit testimony on that question; or the commission should be authorized to send a member or agent to Canada if agreeable to that country, and hold hearings there.

The resolution suggests that the export grain rate structure can be completely separated from the domestic structure. There has existed in the past some connection between the two. So far as I know, their complete separation has never been attempted, but if Congress gives us that direction, we shall do the best we can in carrying it out. In fact, in connection with the Seattle hearing this idea was suggested and I have given it some thought since then, but, of course, have no conclusion to announce.

In the record now before us in the Grain investigation we have testimony covering all the export rates in the United States and all the domestic rates in western territory. If the Congress should direct us to proceed under this resolution, it would appear to be essential in the interest of economy of time and money to provide that our action, whatever it may be, shall be based upon the record in the grain investigation except only as to such point or points regarding which the commission rather than the parties may desire additional evidence.

I refrain from commenting on many other features of Governor Reed's statement, because they are issues in the grain case which neither I nor any other member of the commission can discuss at this time without breach of propriety.

Freight Car Loading

WASHINGTON, D. C.

REVENUE freight car loading during the week ended February 16 amounted to 958,051 cars, an increase of 69,465 cars as compared with the corresponding week of 1928 and of 3,257 cars as compared with the corresponding week of 1927. Coal loading amounted to 212,980 cars, an increase of 55,943 cars, which accounted for the greater part of the gain shown in total loading as compared with a year ago. Increases in loading of grain, coke and miscellaneous freight as compared with the corresponding week of 1927 more than offset decreases in loading of forest products, less-than-carload merchandise and other commodities. Loading in all districts, with the exception of the Northwest, was larger than in the corresponding week of last year. The summary, as compiled by the Car Service Division of the American Railway Association, follows:

Revenue Freight Car Loading

Week Ended Saturday, February 16, 1929

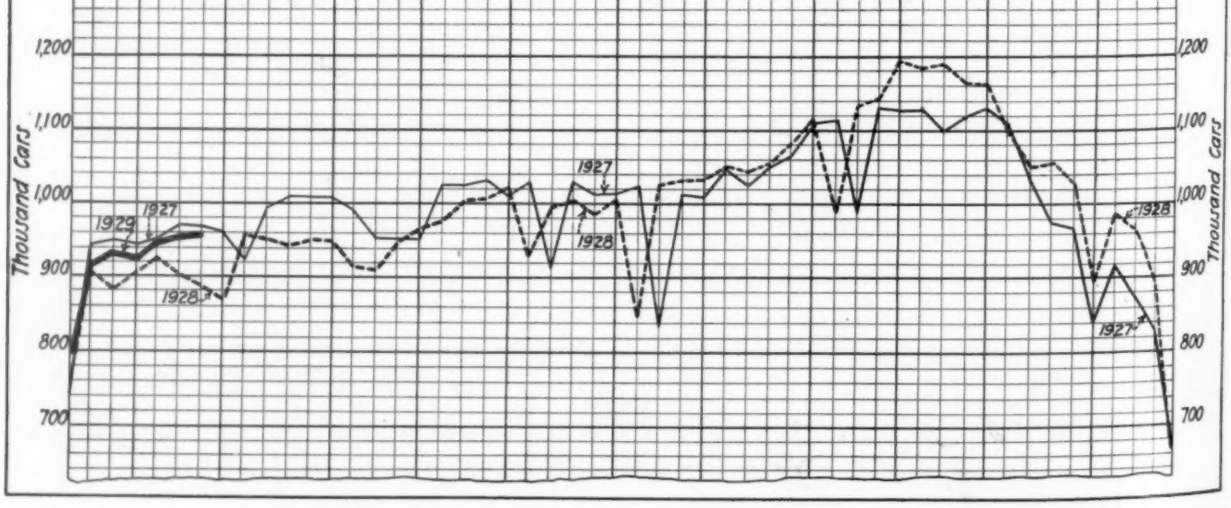
Districts	1929	1928	1927
Eastern	226,504	200,001	221,094
Allegheny	193,423	177,365	196,533
Pocahontas	60,238	50,138	56,256
Southern	148,400	143,409	155,971
Northwestern	113,538	117,100	116,442
Central Western	139,936	129,104	133,984
Southwestern	76,012	71,469	74,514
Total Western Districts	329,486	317,673	324,940
Total All Roads	958,051	888,586	954,794
Commodities			
Grain and Grain Products	47,149	41,310	42,221
Live Stock	26,879	31,698	27,507
Coal	212,980	157,037	213,495
Coke	13,599	10,675	12,496
Forest Products	61,460	68,273	68,824
Ore	9,605	8,422	10,399
Merchandise L.C.L.	248,443	249,172	252,859
Miscellaneous	337,936	321,999	326,993
February 16	958,051	888,586	954,794
February 9	955,478	906,477	962,602
February 2	946,892	926,262	965,664
January 26	926,188	902,664	943,879
January 19	931,880	884,683	936,160
Cumulative total, 7 weeks	6,431,399	6,170,220	6,639,720

Car Loading in Canada

Revenue car loadings at stations in Canada for the week ended February 16 totalled 65,516, an increase over the previous week of 1,471 cars and an increase over the same week last year of 829 cars.

	Total Cars Loaded	Total Cars Rec'd from Connections
Total for Canada		
February 16, 1929	65,516	45,654
February 9, 1929	64,045	46,409
February 2, 1929	60,878	41,437
February 18, 1928	64,687	41,416
Cumulative Totals for Canada		
February 16, 1929	411,308	281,794
February 18, 1928	438,780	262,929
February 19, 1927	414,657	257,454

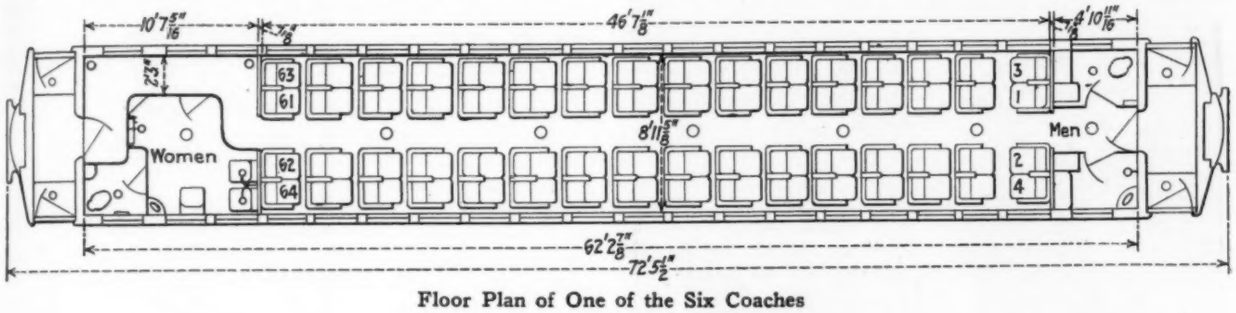
FIVE HUNDRED EMPLOYEES of the Duluth, Missabe & Northern and the Duluth & Iron Range attended a luncheon at Duluth, Minn., recently to celebrate the selection of the latter road as the recipient of the Harriman silver medal safety award. A. V. Rohweder, superintendent of safety of the two railroads, stated that during 1928 employees submitted 1,476 suggestions covering conditions and practices and that 132,785 pieces of safety literature were issued to employees and the public.



Central of New Jersey Inaugurates De Luxe Coach Trains

'The Blue Comets', specially fitted and decorated trains, are placed in the New York-Atlantic City service

ON February 21 the Central Railroad of New Jersey inaugurated a de luxe coach-train service between New York and Atlantic City to replace the present mixed-coach and parlor-car service. The equipment for the two trains, each making a round trip daily, has been completely refitted and redecorated in keeping with the name, 'The Blue Comet,' by which the trains are designated. The exterior of the entire train from the locomotive to the observation platform is finished in Packard blue, Jersey cream and royal blue, and the interior is furnished and decorated in blue tones throughout, from the porters' uniforms to the table service and linen.

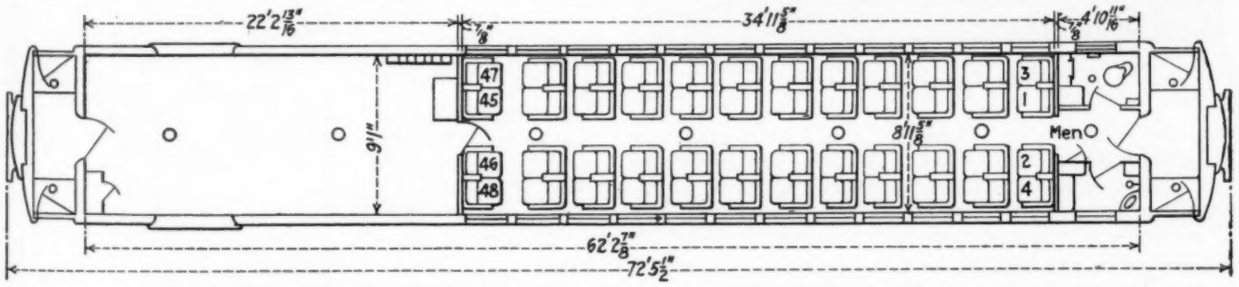


Floor Plan of One of the Six Coaches

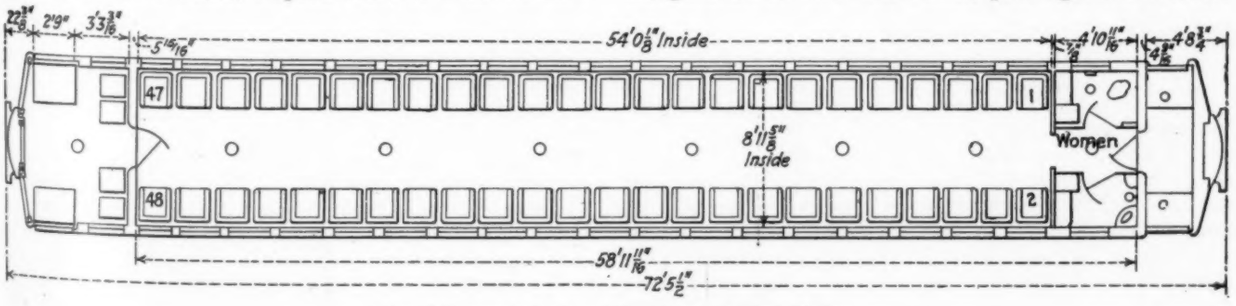
The Schedules

The distance of 136 miles between the terminals is covered in three hours, elapsed time, or 2 hr. 48 min. running time. The schedules have been so arranged that New York passengers can spend some time at business in the morning, leave the city at 11 o'clock have lunch on the train, and spend the afternoon at Atlantic City, or may leave the city at 3:30 p.m. and arrive at the seashore resort in time for dinner. From Atlantic City, passengers may leave at 9:15 a.m., or spend the day at the resort, and leave at 4:35 p.m., having dinner on the train and arriving at New York at 7:35 p.m.

Hammonton, N. J., is the only scheduled stop between the two terminals. Stops are made at Elizabethport, N. J., Red Bank, Lakewood and Lakehurst, only to receive and discharge passengers to or from Hammonton and points beyond. Non-stop trains run in both directions from Newark, N. J., to make connections with 'The Blue Comet' trains at Elizabethport. With the inauguration of 'The Blue Comet,' passenger-train service



The Combination Baggage and Smoking Cars Are Also Furnished with Bucket Type Seats



The Observation Cars Will Seat 48 Passengers

on the branch line between Winslow Jct., N. J., and Bridgeton has been supplanted by motor-coach service.

Seats in Coaches Are Numbered

Special tickets have been printed on blue paper stock, each of which carries a number and a letter to designate the coach in which the seat has been assigned, similar to a theater. While standing at the terminals prior to departure, a metal plate on which the car designation letter is painted in Jersey cream against a Packard blue background projects out from a bracket over the platform

The Ladies' Lounge

steps on each coach. Passengers thus have no difficulty in locating their cars and seats. No seats are sold in the observation or smoking cars; the passengers have full use of all of the facilities on the train without extra fare. This seating arrangement has been adopted in order that the train may not be over-sold.

The Personnel of the Train

The porters and dining car waiters and kitchen crew have been carefully selected so that the service may be of the best. Each train carries a porter whose natty French-blue uniform harmonizes with the blue interior decorations of the cars. The dining-car waiters are attired in white uniforms trimmed with French-blue epaulets, chevrons and trouser stripes. A blue vest and white shoes and socks complete the uniform.

The Locomotives

Two modern Pacific type locomotives equipped with automatic train control are assigned to this service. The engine and tender, except for the smokebox, are finished in Packard and Royal blue. The headlights, the front marker lights, the front-end hand-rail column, the coupler-lock lifting rod and the front and back valve-chamber and cylinder-head covers are chromium plated. The main and side rods are polished. The emblem of the road, in gold letters on a dark blue ground, appears on each side of the tender. A plate, carrying the name of the train in gold letters against a blue background, is attached to brackets located above the front-end door.

Thirteen modern all-steel cars, consisting of two combination baggage and smoking cars, two observation cars, six passenger coaches, two baggage cars and one dining car, were completely refurnished and refinished inside and out at the Jersey Central shops for use on 'The Blue Comet' trains. Ten of the cars are equipped with Hyatt roller bearings and the dining car is equipped with Timken roller bearings. Standard bearings are used on the 70-ft. baggage cars.

The outside surfaces of the cars are finished in Packard blue and Jersey cream color, the latter being used between the belt rail and letter board. The eaves are royal blue. The name of the train in gold letters appears on the letter board. Each car is named after a comet, the name, in gold letters, being placed in the middle of the side, below the windows. The name of the road does not appear on any of the cars. The underframes and trucks are painted royal blue and varnished.

The interior of the smoking cars, coaches and observation cars are finished in circassan walnut with cream-colored headlining and baggage racks. The window shades are made of blue Spanish pantasote material. Each car is furnished with drinking-cup and towel-vending machines for both men and women. The observation cars are furnished with four nickel plated 12-in. fans, two located at each end of the car and the remainder of the passenger cars are provided with two nickel-

plated, 12-in. fans, one located at each end. All interior hardware is nickel plated.

With the exception of the observation car, each car in the train is furnished with a men's lavatory and wash room, located on opposite sides of the aisle, the walls of which are finished in a two-tone light grey. White porcelain hoppers are used and the piping is all nickel-plated. The wash room contains a white porcelain wash bowl to which is attached a nickel-plated fixture from which can be obtained hot and cold water and liquid soap. In addition to a mirror and a nickel-plated rack to receive soiled towels, each wash room contains a blue leather upholstered seat, large enough to seat two passengers.

The smoking car contains 48 bucket-type seats, each provided with a center arm rest, which may be lowered. The seats are covered with blue leather. The two bulkhead seats are non-rotating. A match striker is attached to the bottom of each window post and on the back of each pair of seats is a cup-type ash tray of royal blue. A table, which can be used for playing cards, can be placed between the two pairs of facing seats next to the bulkhead. Each smoking car is furnished with 22 nickel-plated cuspidors. The floor of this car, as well as the vestibule and lavatory floors of all of the cars, is covered with a diamond pattern blue and white tiling.

The passenger coaches contain 64 bucket-type triple-cushioned seats upholstered in rich Persian-blue figured mohair material with wide golden-tinted strips. A nickel-plated coat hanger and umbrella holder is attached to the rear of each seat. The coach floors are covered all over with thick carpet laid on Ozite. The carpet has a Persian blue ground into which is worked an all-over design in gold, modernistic in character.

An attractive women's lounge with a connecting toilet, has been provided in each coach. Two wicker arm chairs and a boudoir chair, covered with a rich flowered printed linen, are placed in each lounge. A full-length mirror is set in the toilet-room door and a smaller mirror is located in front of the boudoir chair. A cup and towel vendor, ice-water container and an electric fan are provided. A cup-type ash tray of royal blue is located between the two windows.

The observation cars are each provided with 48 silver-blue reed arm chairs, upholstered in Persian-blue Avalon plush in which is worked a golden-tinted flower design. The floor is covered all over with a deep blue carpet in which is worked a golden-tinted meteor design. The observation platform will accommodate six collapsible chairs. This car contains a women's lavatory and wash room. A nickel-plated card holder is attached to the bulkhead wall on each side of the corridor. In one is a card, which reads "Smoking Car Forward," and in the other is a card which, under the caption, "Train Crew Today," gives the name and years of service of the engineman and conductor.

The Dining Car

A standard 36-passenger dining car has been completely refinished and re-equipped for use on 'The Blue Comet' trains. The floor is covered with carpet similar to that used in the observation cars. Four nickel-plated 12-in. fans are provided, two located at each end of the car. Above each window is a panel of frosted glass in each of which has been hand etched a design representing a comet, with stars and clouds. Blue bulbs are used in the deck lights, which give a delicate blue lighting effect through the white shades. The tables are set with Czecho-Slovakian table linen in a light tone of ultra-marine blue. The color scheme is completed by the use of rich dark blue china and glassware. Each table is provided with a light which consists of a silver base and a circular parchment shade on which are painted gold stars and comets. A complete set of new silverware has been placed in the car. The kitchen has been equipped with a new range and new cooking utensils. A 75-cent blue-platter luncheon and a $1.25 dinner are served, in addition to a-la-carte service.

One of these trains was placed on public exhibition at the Jersey City Terminal of the Central of New Jersey on the afternoon of February 14, at Atlantic City, N. J., on February 15 and at Newark, N. J., on February 16.

The Observation Cars are Furnished with 48 Silver-blue Reed Upholstered Chairs

Preparatory to the inauguration of the new service, the road bed of the entire line over which this train operates has been oiled.

The illustration, entitled "Trail of The Blue Comet," was reproduced from one of the circulars, in colors, issued by the Jersey Central for distribution to the public.

THE UNION PACIFIC SYSTEM in 1928 carried 3,091,964 passengers an average distance of nearly 300 miles without a single injury in an accident to a train, although 10 passengers were injured in alighting from trains or in other ways. This represents a reduction in casualties of 37.5 per cent as compared with 1927. Injuries to employees, on these lines, of whom there were about 52,000, totaled 550 in 1928 as compared to 701 in 1927 or a decrease of more than 21 per cent in the one year and of approximately 70 per cent in the past five years.

THE INSTALLATION OF ELECTRIC TRACTION in January on the Zurich-Schaffhouse division of the Swiss Federal Railways brought about the completion of the accelerated electrification program of the system, according to the Department of Commerce. All the lines provided for in the program which originated in 1923, and two more in addition, have been completed on scheduled time. Of the total trackage of the Swiss Federal Railways, 67 per cent is now electrified, which includes 98 per cent of the double-track lines and over 68 per cent of the principal lines.

During 1929 it has been estimated that more than 85 per cent of the freight traffic, measured either in metric tons or in metric ton-kilometers will be moved by electric traction. Swiss railways will consume in place of 600,000 tons of coal about 420,000,000 kilowatt hours of electrical energy, it is estimated.

Burlington Improves Efficiency

Builds up locomotive performance by retiring old power—
Had heaviest freight business in 1928

THE Chicago, Burlington & Quincy in 1928 had freight revenues of $126,952,879, the largest of any year since federal control. Total revenues in 1928 were $162,891,409, the largest of any year since 1923. The decline in total revenues, comparing 1928 with 1923, was over eight million dollars, which is more than accounted for by a falling off of over nine millions in passenger revenues.

Freight revenues in 1928, as noted above, exceeded those of 1923. The difference was not great, however, —$126,952,879 last year and $126,433,098 in 1923. Cumulative operating statistics for the first eleven months of 1928 show gross ton-miles only one per cent greater than the same period in 1923. Apparently, therefore, as far as freight service is concerned, the two years are fairly comparable. Table I herewith shows a comparison of selected freight service operating statistics for the two years. In this table is disclosed the fact that an increase of one per cent in gross ton-miles was moved with a decrease of 13 per cent in freight train-miles, 14 per cent in locomotive miles and 21.2 per cent in freight-train-hours. Cars per train, tons per train, train speed and ton-miles per train-hour show great improvement, as does fuel economy. A considerable reduction in equipment awaiting repair also appears, but this probably should not be overemphasized in view of the fact that 1923 was the year immediately following the shop strike.

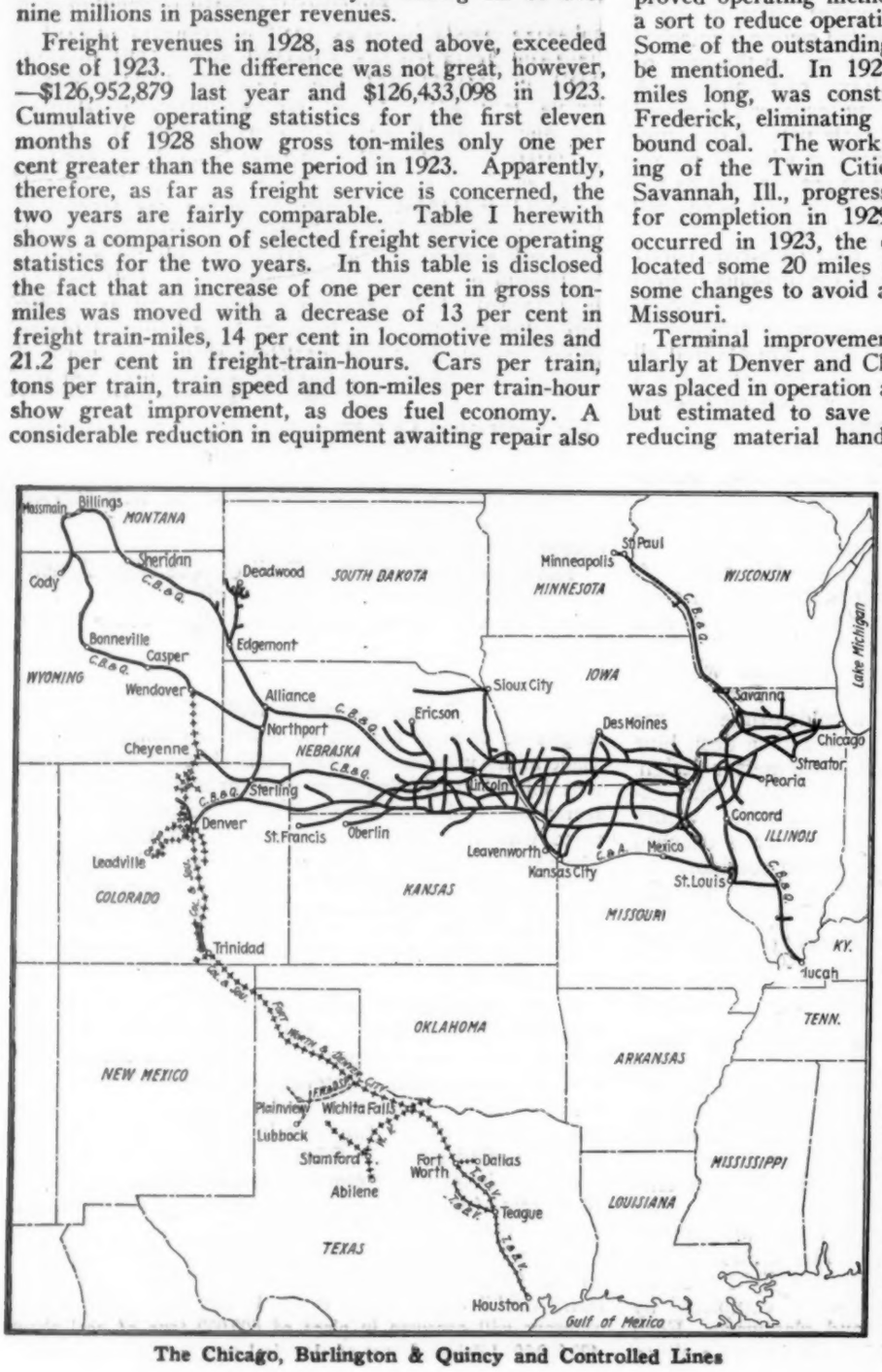
Improvements to Roadway

To the more efficient operating performance, improved operating methods and capital expenditures of a sort to reduce operating expenses contributed greatly. Some of the outstanding additions and betterments may be mentioned. In 1923-24 a new low-grade line, 18 miles long, was constructed from Vermont, Ill., to Frederick, eliminating a pusher grade against northbound coal. The work of completing the double-tracking of the Twin Cities line between St. Paul and Savannah, Ill., progresses each year and is scheduled for completion in 1929. Following washouts which occurred in 1923, the company reconstructed and relocated some 20 miles of line in Wyoming and made some changes to avoid a similar situation near Weston, Missouri.

Terminal improvements have been effected, particularly at Denver and Chicago. A modern stores plant was placed in operation at Aurora, Ill., costing $500,000, but estimated to save at least $100,000 annually by reducing material handling expense and interest on stores because of a reduction in inventories made possible by more efficient handling.

Engine terminal improvements, to reduce operating expense and permit the utilization of larger power, have been carried on each year, together with bridge improvements and renewal looking toward the same end. Provision of better boiler water by the installation of modern treating facilities has steadily progressed.

Extensive additions to grain elevators at Kansas City, Mo., St. Joseph, Mo., and Council Bluffs, Ia., have been made. Improved feed yard facilities were constructed at Lincoln, Nebraska.



The Chicago, Burlington & Quincy and Controlled Lines

The Burlington's Heavy Freight Locomotives

The Burlington in 1927, after having been out of the locomotive market for some time, placed an order for twelve powerful 2-10-4's for freight service. These locomotives, in service on the Beardstown division, were assigned to handling coal trains of 8,000 tons. It was estimated that these engines, on a ton-mile basis, reduced fuel

consumption by 16 per cent, water consumption by 22 per cent and crew wages by 25 per cent. Because of their greater tonnage they reduced the number of trains; because of their greater speed, overtime payments were reduced; their fuel and water economy and greater tender capacity made it possible to reduce the stops for coal and water. (These locomotives were described in the *Railway Age* of June 23, 1928.) Other equipment ordered by the Burlington in the past four years includes six additional 2-10-4 locomotives, 13 Mountain type and 22 switching locomotives, 183 passenger train cars and 10,650 freight train cars.

Expenditures for additions and betterments in the years 1923-1927, inclusive, totaled $53,991,430, of which 71 per cent were for roadway and structures and 29 per cent for equipment.

The Burlington at the beginning of 1928 had 2,914 miles of line automatically signaled and 3,756 manually signaled. These totals may be compared with the road's total main line mileage owned of 4,670 (branch lines and leased or trackage rights counting for the remainder of the total of 9,377). At the beginning of 1924 the mileage of automatic signals was only 1,481. In other words, the company in a period of four years practically doubled its already substantial mileage so protected.

Retirement of Old Power Promotes Efficiency

On January 1, 1924, the Burlington owned 1,059 road freight locomotives with an aggregate tractive effort of 45,827,300 lb., making the average per locomotive 43,274 lb. At the end of December, 1928, it had reduced the number of freight locomotives to 871 with an aggregate tractive effort of 43,843,896, an average per locomotive of 50,337 lb. The reduction in the number of locomotives in this period was 17.8 per cent; the reduction in total tractive effort, 4.3 per cent; and the increase in average tractive effort, 16.4 per cent. This tremendous change in the direction of efficiency was made largely by the retirement of the older power and the more efficient utilization of what remained—since obviously the relatively few purchases of road freight locomotives in recent years could, unaided by retirements, have had but slight effect upon these averages and totals. On the other hand, the Burlington has progressively modernized its locomotives with new and improved devices designed to add to its efficiency and power.

Maintenance and Transportation Ratios

The ratio of maintenance of way expenses to operating revenues was 12.8 per cent in 1923 and 11.9 in 1924, thereafter climbing steadily to 15.1 in 1927. In this 1924-27 period, however, ties (all treated) inserted per equated track mile rose from 174 to 185, track miles of rail replacements from 476 to 773 and average weight per yard of new rail laid increased from 95 lb. to 97 lb.

The ratio of maintenance of equipment expenses to operating revenues was 23.7 per cent in 1923 and declined steadily to 16.9 per cent in 1927. This improvement reflects not only the return to normal conditions following the shop strike, but also greatly increased efficiency in the mechanical department, which is reflected in a large reduction in maintenance cost per freight car and per locomotive-mile. A change in the equipment depreciation rate also affected the figure, as undoubtedly did the retirement of old equipment.

The transportation ratio was 37.0 per cent of operating expenses in 1923; 35.5 in 1924; 34.6 in 1925; 33.7 in 1926; and 34.2 in 1927. Here again the heavier train loading, the increased train speed and the improved fuel efficiency are reflected.

Table I—Comparison of Selected Freight Operating Statistics

	Eleven Months 1928	Eleven Months 1923	Per cent of change Inc.	Dec.
Mileage operated	9,318	9,333		0.2
Gross ton-miles (thousands)	31,106,837	30,795,959	1.0	
Net ton-miles (thousands)	14,078,106	14,230,974		1.1
Freight train-miles (thousands)	16,671	19,169		13.0
Freight locomotive-miles (thousands)	17,957	20,868		14.0
Freight car-miles (thousands)	835,453	811,798	2.9	
Freight train-hours	1,262,969	1,603,581		21.2
Car-miles per day	36.8	34.3	7.2	
Net tons per loaded car	26.6	27.7		4.0
Per cent loaded to total car-miles	63.4	63.3	...	...
Net ton-miles per car day	620	602	3.0	
Freight cars per train	51.0	43.3	17.8	
Gross tons per train	1,866	1,607	16.1	
Net tons per train	844	742	13.7	
Train speed, miles per train-hour	13.2	12.0	10.0	
Gross ton-miles per train-hour	24,630	19,204	28.3	
Net ton-miles per train-hour	11,147	8,874	25.6	
Lb. coal per 1,000 gross ton-miles	125	173		27.8
Loco. miles per loco. day	59.3	63.3		6.3
Per cent freight locos. unserviceable	18.4	20.8		11.5
Per cent freight cars unserviceable	5.0	6.8		26.5

The Burlington's traffic is well diversified. In 1927 it was divided as follows: Products of agriculture, 20.8 per cent; products of animals, 6.5 per cent; products of mines, 40.4 per cent; products of forests, 5.9 per cent; manufactures and miscellaneous, 22.6 per cent; and l.c.l. 3.8 per cent. The average haul was 283 miles and the average receipts per ton-mile 0.992 cents.

Of railroads which in 1927 had freight revenues of over $10,000,000, there were but six which had a lower freight expense per freight gross ton-mile (2.56 mills) and four of these six are heavy-traffic coal roads.

In spite of the material increase in gross revenues in 1928 compared with the last few years preceding, net railway operating income in 1928 was but $32,912,367, as compared with standard return during federal control of $33,390,080. Since that period millions have been invested in the property and this investment has not earned any increased return for the railroad. The added investment, of course, was for the purpose of increasing operating efficiency and the figures show

Table II—Chicago, Burlington & Quincy, Operating Results, Selected Items, 1916 to 1928

Year	Mileage	Revenue ton miles (thousands)	Revenue passenger miles (thousands)	Rev. per ton mile cents	Total operating revenues	Total operating expenses	Net operating revenues	Operating ratio	Net railway operating income	Net after charges	Net charges for additions and betterments
1916	9,373	10,923,326	1,097,092	0.708	$109,191,204	$65,235,705	$43,955,500	59.74	.....	$32,994,726	.....
1917	9,373	13,143,186	1,186,682	0.662	122,342,707	78,632,344	43,710,363	64.27	.....	29,406,032	$19,321,973
1918	9,373	14,162,605	1,144,479	0.738	144,172,769	112,067,616	32,105,153	77.73	$25,089,199	22,792,500	12,434,969
1919	9,372	11,952,721	1,346,973	0.895	154,011,438	120,492,962	33,518,478	78.24	25,428,088	23,542,471	6,920,610
1920	9,390	14,130,364	1,314,984	0.932	185,270,768	164,017,388	21,253,380	88.52	8,100,104	22,924,364	14,738,485
1921	9,364	10,554,788	999,701	1.163	168,712,268	128,216,290	40,495,978	76.00	28,696,588	25,609,973	8,304,559
1922	9,364	11,754,596	941,748	1.033	164,916,471	126,777,703	38,138,767	76.87	25,152,174	20,261,488	19,359,165
1923	9,401	12,690,384	967,097	0.996	171,270,661	134,290,379	36,980,282	78.41	25,365,567	19,290,529	17,406,999
1924	9,407	12,287,748	909,302	0.975	162,674,878	119,958,734	42,716,144	73.74	28,742,112	21,899,829	9,537,772
1925	9,404	12,298,288	893,670	0.965	159,155,178	116,671,868	42,483,310	73.31	28,131,918	21,184,593	11,432,319
1926	9,392	12,651,222	871,773	0.960	161,317,442	116,462,808	44,854,634	72.19	29,955,831	23,987,968	6,889,525
1927	9,390	11,942,859	811,600	0.992	156,320,453	111,917,503	44,402,950	71.60	28,143,308	21,443,123	10,971,881
1928	9,375	.....	.....	....	162,891,409	114,191,159	48,700,250	70.10	32,912,367	.....	.....

Standard return for operations during federal control or average net railway operating income for three years ending June 30, 1917—$33,390,080.

that this result was accomplished. Traffic also held up fairly well, comparatively speaking. The fact that the Burlington has not been compensated for its investment and enterprise in improving its transportation service is due solely to the inadequate rates received for the service it performs.

The road had a corporate surplus of $200,076,843 at the end of 1927, which may be compared with outstanding common stock of $170,839,100. To this conservative capitalization may be accorded the fact that it is able regularly to pay 10 per cent dividends in spite of inadequate earnings on the investment.

The great decline in passenger business on the Burlington, unfortunately not an uncommon condition nowadays, has been noted. A determination to combat this situation, however, is shown in the recent announcement by the company of the formation of a highway subsidiary with plans for the immediate establishment of extensive motor coach lines in Burlington territory.

Motor Transport Division Meets

THE regular meeting of the Motor Transport Division of the American Railway Association opened on February 26 at the Hotel Jefferson in St. Louis. Approximately 100 members, representing about 60 steam railroads, were registered the first day and this number was increased as the meeting progressed.

In the temporary absence of Chairman A. P. Russell, executive vice-president of the New York, New Haven & Hartford and president of the New England Transportation Company, highway subsidiary of that road, the meeting was called to order by R. L. Fairbairn, manager of the passenger service bureau of the Canadian National at Montreal. The report of the General Committee was read by Ray N. Van Doren, vice-president and general counsel of the Chicago & North Western and chairman of the Law Committee of the Division. Recommendations of the General Committee that the number of regular meetings be reduced from three to two a year and that the next meeting be held in Toronto, Canada, in November, were adopted. Mr. Van Doren also presented the report of the Law Committee, explaining the present status of the Parker Bill for interstate motor coach regulation, which is now before Congress, and answered questions regarding regulatory matters.

Following this the Motor Coach Section assumed control of the proceedings with R. J. Littlefield, manager of motor coach service of the Boston & Maine Transportation Company, in the chair in the absence of Chairman T. B. Wilson, vice-president and manager of the Southern Pacific Motor Transport Company.

The session of the Motor Coach Section consumed the remainder of the opening day, while on February 27 the meeting of the Motor Truck Section was held, to be followed on February 28 by the session of the Rail Motor Car Section and on March 1 by the Joint Conference with representatives of the automotive industry.

On the morning of February 27 the members at the invitation of E. F. Bisbee, vice-president, East St. Louis Junction Railway, attended a breakfast at the National Hotel, National Stock Yards, Ill., and while there observed motor truck operations. Motor coaches of the Missouri Pacific Transportation Company fleet were provided to convey the delegates to this breakfast.

The Missouri Pacific tendered a dinner to the delegates on February 27 at the Hotel Jefferson. The principal speaker was Samuel O. Dunn, editor of the *Railway Age*, who addressed the gathering on "Modern Transportation."

Maintenance of New York Central Electric Rolling Stock*

FROM the beginning of electrical operation, an efficient organization has been maintained by the New York Central for the repair and inspection of all electric rolling stock. From 1908 to the end of 1927, the electric locomotives used in the electric zone had operated a grand total of 38,404,000 locomotive-miles. Records show that the cost of maintaining these locomotives during this entire period has averaged approximately nine cents per locomotive mile.

Included in this figure are many items which might be termed extraordinary maintenance in connection with heavy repairs to the original class "S" locomotives which, after more than 20 years of service, are now undergoing the first back shop repairs. About half of these locomotives have already been overhauled.

Since starting electrical operation, the multiple-unit car equipment, consisting of 125 motor cars and 55 trailers at the beginning of operation and now totaling 336 motor cars, has made a total of 125,600,000 car-miles up to the end of 1927. The cost of maintaining these cars over this entire period has averaged approximately five cents per car-mile. There is now under way a program for rebuilding the first 180 cars. A portion of this expense is charged to maintenance.

* Abstract from General Electric Bulletin No. 902, entitled New York Central Electrification, dated January, 1929.

THREE MILK TRAINS DAILY are brought into Hoboken, N. J., by the Delaware, Lackawanna & Western, bringing milk from a large territory in New York state; and the average daily delivery—429,380 quarts of milk and 294,408 pints of cream—makes an average of 300 quarts of milk and 200 pints of cream each minute, day and night.

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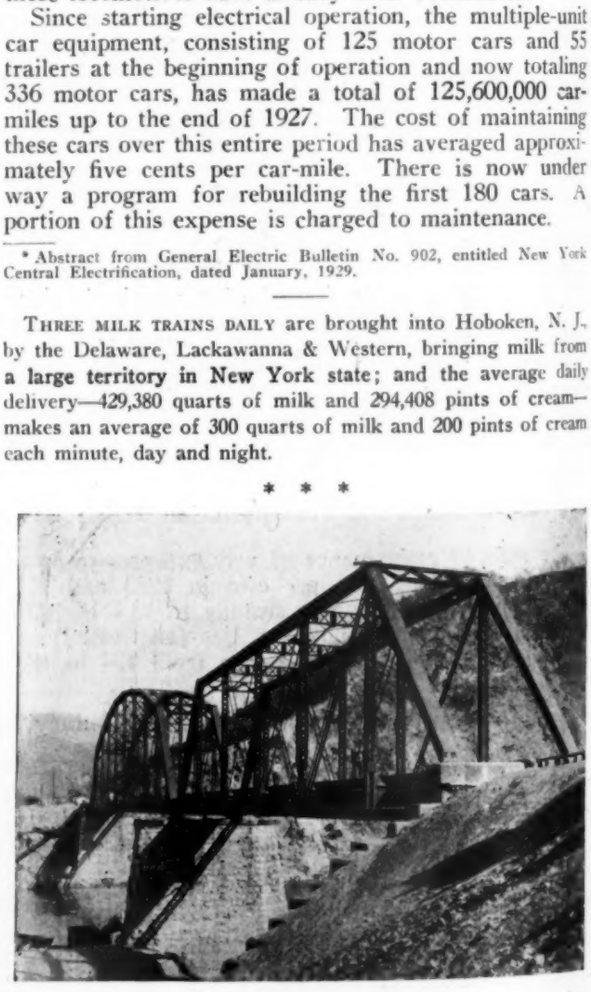


Bridge Over the Tula River, Mexico—Juarez Line of the National Railways of Mexico

Some Recent Phases of Consolidation

Congressional and Commission inertia, following some authorizations for leases and stock control, has brought instances of community of interest by indirection

By Dr. Julius Grodinsky
University of Pennsylvania

CONGRESSIONAL policy and commission administration of railroad consolidation has precipitated a fairly complete impasse.* The existing law enacted in 1920 directed the Interstate Commerce to formulate a plan within the boundaries of which, subject to revision, all consolidations initiated by the carriers must fit. The Commission, however, far from preparing a plan, has asked Congress to exempt it from the duty. The law provided for partial consolidations, acquisitions so-called, as an interim measure—to bridge the gap of time pending the consummation of complete consolidations under Commission leadership. Acquisitions developed by the carriers were to be approved or disapproved by the Commission in the light of the public interest. The Commission freely approved the earlier applications (with few exceptions), and with some reservations bearing upon corporate ethics. It suddenly reversed its attitude in the famous Nickel Plate decision early in 1926. It followed this up with other important disapprovals at the same time making clear its views that short and financially weak lines must be taken care of (in seeming disregard of the possible adverse effect of such action on the public interest) and that in corporate acquisitions due regard must be had to the proportion between assets controlled and investments made to secure such control.

The reversal of Commission policy proved to be a serious error. Its early approval of the organization of the Missouri Pacific system and its sanction of the merger of the present Nickel Plate, effected under the auspices of state laws, stimulated other carriers into activity. It led to the consideration of far-reaching plans for consolidation in all parts of the country. Once corporate unification develops any substantial driving power, it compels all carriers to participate. Essentially, subject to infrequent exceptions, consolidation aims to divert the movement of traffic over the consolidated system, and away from its present connections. The Missouri Pacific unification has succeeded in throwing considerable traffic of its controlled Gulf Coast Lines from other companies to the main line of the parent system for northward movement. Diversion of interchange traffic of this character is well known in railroad circles, and is recognized as an essential result of any rearrangement in the corporate control of existing carriers.

Under such circumstances no road can remain quiescent. A whittling away of its interchange traffic can not continue without producing a serious effect upon its earnings. The surprising ease with which the earlier acquisitions were effected with full Commission approval served apparently as a broad invitation to other carriers to go ahead with their plans. The extent of this activity in 1923-25 may be gaged by the circumstance that in all probability most of the really important unifications since effected with or without Commission sanction originated during that period. Prior to 1926 it seemed clear that consolidation was to proceed largely according to plans developed by the carriers. The Wabash had acquired the Ann Arbor; the Missouri Pacific had acquired the International Great Northern, the Gulf Coast Lines and a 50 per cent interest in the Denver & Rio Grande Western; the Illinois Central had leased the Alabama & Vicksburg, and the Vicksburg, Shreveport & Pacific; the Pennsylvania and the New York Central had leased numerous of their subsidiaries formerly controlled by majority stock interest; the Milwaukee had leased the Chicago, Milwaukee & Gary and the Chicago, Terre Haute & Southeastern, and an enlarged Nickel Plate System had been formed out of the old Nickel Plate, the Clover Leaf, and the Lake Erie & Western secured from the New York Central. Few questions had been asked; and what the railroads had proposed, the Commission had largely approved.

It is essential to recognize that all this commotion of activity was not in any substantial way connected with consolidation for ownership and operation called for by the Transportation Act. Consolidation into a single system for complete ownership represented the ideal of the legislators. This ideal could not be realized, until the Commission had announced its plan of consolidation. And this had not been done. The distinction, however, between consolidation based on complete fee ownership, and unification based on share control or lease contract, was not necessarily demanded by practical circumstances. Most of the strong railroad systems of the country have not been built up through conveyance of fee ownership. Some of the western lines—like the Chicago and North Western and the Milwaukee—which extended into virgin territory by continuous construction are perhaps exceptions. The majority of the roads developed their systems through the use of the various well known media of finance. A lease, a traffic agreement, a trackage agreement, a majority share interest, a joint control and guarantee of outstanding or newly incurred debts were the tools employed on different occasions.

Loose Consolidations as Compared with Complete Unification

A system developed in this manner in not ideal. It represents the result of the workings of those trades and negotiations, that characterize business life. But it serves its purpose well. The system functions as an organic unit. It is dominated by a unity of purpose and a unity of action. The Baltimore & Ohio traffic salesman is not seriously handicapped in soliciting for business from Chicago to New York because a large part of its system is not directly controlled in fee ownership. Its multiformity of ownership does not impair

*This article was written prior to such recent developments as the decision in the New York Central case, renewed activity of the commission in studying consolidation, the Baltimore & Ohio and Van Sweringer applications and the introduction of the Fess bill. The bearing of these changes on the author's main thesis is slight and may safely be reserved for later consideration.—Editor.

its service. Traffic is solicited as effectively, and moved as efficiently, over a system owned kaleidoscopically as over a system fully crystallized in ownership.

This is not to gainsay the evident advantages of a system in single ownership and operation. Financial institutions and wealthy investors have acquired a predilection for bonds secured by mortgages on property owned in fee. They are willing to pay a higher price, other conditions being equal, for bonds so secured than for bonds secured by leasehold contract, share collateral, or by mortgages bearing the slightest degree of inferiority in the mortgage hierarchy. Bonds of a system wholly unified in ownership sell at a higher price than bonds of one unified indirectly by lease contract or share control.

There is this further, and under particular circumstances, significant advantage: the road need not concern itself with the embarrassing problem of the rights of the minority shareholders. (It may be stated parenthetically that a lease disposes of minority shareholders equally well). Minority shareholders have a claim proportionate to their ownership on the earning equity of the company. Anything done that should not be done, or not done that should be done, and which impairs the company's earning power, impairs proportionately the property interests of the minority shareholder. If the majority shareholder be the controling carrier in a system, similar action or inaction may not impair its vital vested interests. The road may control a route between common points, duplicate to or alternative with that controlled by the parent road. At times it may be most economical to send available traffic over the line of the parent company. This would decrease the earnings of the other company with resultant damage to the property rights of its minority shareholders. What the parent system might lose in lower earnings on its controlled company, however, it might more than gain by a corresponding increase in its own earnings. The parallel routes of the old Lake Shore & Michigan Southern and the present Michigan Central between Chicago and Buffalo on opposite sides of Lake Erie is a case in point. Under a system wholly unified in ownership or wholly leased, the traffic may be routed in the best interests of the system as a unit, and incidentally in the best interests of the public.

These advantages are well known and thoroughly appreciated. But they are not essentially fundamental in rendering a decision upon the merits of consolidation. The Van Sweringens preferred to unify through lease the properties of the New York, Chicago & St. Louis, the Pere Marquette, the Chesapeake & Ohio, the Hocking Valley and the Erie. The Commission's rejection of this plan led not to the dissolution of the system, but rather to a change in its corporate form. The controlling interests then proposed to unify the system through share control. Consolidation and unification both aim to control traffic movements, and both forces are well adapted for this purpose.

Carriers Eager for Consolidation

In preparing and presenting their plans the carriers eagerly accepted the opportunity of consummating acquisitions and unifications short of complete ownership. The law permitted the Commission to approve these plans upon a showing of public interest—whatever elusive meaning that term may connote. During 1925 and 1926 a large number of these plans were submitted to the Commission for its approval. The Commission's disapproval of the first major unification in eastern trunk line territory was based on entirely extraneous circumstances—extraneous, that is, to consolidations from the viewpoint of the interests and motives of those who in law and in practice are the only parties who can initiate the plans. The Commission both in this case and in the major unification in southwestern territory (involving the association of the Kansas City Southern, Missouri-Kansas-Texas, and St. Louis Southwestern), approved the formation of both systems as engines of transportation service. But the one did not adequately protect connecting weak lines, and both were not properly financed in the opinion of the Commission. Its approval was therefore withheld.

If a Plan Is Good, Need a Still Better One Be Sought?

The Commission had come gradually to recognize that carriers were zealously pursuing their legitimate business interests in maturing schemes for unification. It came to recognize that the public interest did not vitally require one particular grouping as against another. Certainly no representative of an interested carrier was willing, and no representative of the public was able, to compare the merits of alternative groupings. Even if such a comparison could have been developed, it is decidedly questionable whether it would have served more than a mere academic purpose. The law calls upon the Commission to approve or disapprove with or without conditions a plan or plans submitted to it by carriers engaged in interstate commerce. If a particular grouping presented to the Commission appears to be in the public interest, can it reject it because some other arrangement, theoretically possible, is even more so?

Be that as it may. The Commission, once appraising the situation as not requiring any immediate decision to protect and sustain the public interest, proceeded to the next step of refusing to approve plans submitted on the ground of the insufficiency of the record. It refused to approve the establishment of systems unified by stock purchase or exchange, or by lease, because of the potential interference with subsequent consolidation of all the carriers in the territorial group. The Delaware & Hudson's lease of the Buffalo, Rochester & Pittsburgh, the joint triangular trunk line share control of the Wheeling & Lake Erie, the Chesapeake & Ohio's share control of the Erie, the Reading's lease of the Lehigh & New England, represent some of the victims of this line of reasoning.

The new policy of the Commission was directed against a *fait accompli*. Plans laid before the Commission were not prospects or possibilities. They were complete structures built in response to the business needs of the carriers. They represented for the most part new business organizations functioning actively. The extremely crude administrative machinery provided for in the law now came to be practically appreciated. If the unification did not command the approval of the Commission, then by implication at least it was not legal. It should therefore be dissolved. If the carriers proposed to be unified were competitors, and if the unification under consideration promised to lessen competition in a substantial degree, the Clayton Act was available to clothe the Commission with the legal power to effect the break-up of the combination. The Wheeling & Lake Erie competes directly for business with the New York Central and the Baltimore & Ohio. And the Commission has proceeded against both these lines under the Clayton Act. But the New York, Chicago & St. Louis, the third joint and equal owner of the

Wheeling, does not compete substantially with that road. The Commission may, perhaps, succeed under the Clayton Act, in compelling two trunk lines to dispossess themselves of the stock illegally acquired. Suppose they sell the stock to the New York, Chicago & St. Louis to which the Commission has refused permission to delegate its representatives to hold directorates on the Wheeling board? A pretty congeries, indeed.

If, however, the roads involved in a proposed unification do not compete to a sufficient degree to bring their combination within the purview of the Clayton Act, the Commission is rendered helpless. The existing law, whence the Commission derives its only power, states clearly that it can act affirmatively in approving an acquisition "not involving the consolidation of such carriers into a single system for ownership and operation", only upon application of a carrier or carriers. It is not entirely certain whether the framers of the law contemplated that carriers would secure consent of the Commission to a unification in prospect; and, after securing its consent, enter the market and acquire control. This method, if it was ever really seriously considered, is entirely impracticable. It would open an opportunity for capable, well-informed, and wealthy speculators and others to dictate terms in consonance with their strategic situation. A decision of the Commission would create a seller's market—the seller controls the supply, and he fixes the price. Perhaps the law could provide for condemnation of the stock on the basis of an appraised value. The application of the law of condemnation to personal property is a wide open legal question; and no doubt widely varying views prevail.

In any event, the transfer of corporate control of going railroad properties has usually been brought about through the regular channels of exchange and negotiation. Railroad executives have proceeded in the furtherance of the interests of the properties committed to their protection, to acquire control of the necessary properties prior to submission for Commission approval. The stand taken by the Commission disapproving carrier acquisitions on no ground except possible disturbance of some subsequent consolidation plans, discouraged presentation of plans for Commission consideration. Some carriers had completed their plans with Commission approval, and others had practically completed theirs despite Commission disapproval. Other carriers with plans in the making decided to go ahead with complete disregard, one is tempted to say, of the views of the Commission.

In the working out of the railroad's plans the Commission has gradually faded out of the picture as a factor of any serious importance. Fundamental forces underlying consolidation began to operate in 1924 with the sanction of the Commission. Economic conditions were fairly propitious. Market prices of voting securities, commanding control of extensive properties, were low. The real earning power of many carriers was not reflected in current earnings. Large capital investments in additions and betterments during previous years had not yet produced the savings of which they were capable. And securities acquired in most, though not in all cases, soon showed substantial appreciation in value. Other properties, financially unremunerative for the present, possessed considerable strategic value. They controlled approaches to important terminals or gateways; they provided additional capacity for carrying of traffic; or they possessed trading values—more crudely termed "nuisance" values.

The management of no important property could afford to have its traffic diverted, or important strategic connections pass into unfriendly hands. In self protection, therefore, roads took steps to acquire well located properties with good existing or prospective earnings. These activities were well under way when the Interstate Commerce Commission suddenly reversed its laissez-faire policy. The Commission's pronouncements of *quid pro quo* were not acceptable. Railroads could not be blamed for their refusal to impair their earning power by buying what from the financial standpoint were no more than "dead horses". The situation was further aggravated by the freedom from such burdens enjoyed by roads that had with Commission approval already completed their plans. In eastern territory the Pennsylvania had with Commission approval already leased its share-controlled properties. Substantially similar plans of the New York Central were held up until connecting short lines were included. And in southwestern territory the plans of the Missouri Pacific for the creation of a new system from St. Louis to the Rio Grande on the south, and to Denver on the west also met Commission approval. Plans for a rival system involving the Kansas City Southern, Missouri-Kansas-Texas, and St. Louis Southwestern failed of official benediction because of financial frailties.

Commission rejection could not, and did not, place any serious brakes on the progress of unification. The movement had already gone too far. Plans based on purchase contracts and corporate leases, subject to Commission approval, were of course summarily dropped. The proposed leases of the Buffalo, Rochester & Pittsburgh, and of the Lehigh & New England to the Delaware & Hudson and the Reading, respectively, and of the Nickel Plate, Erie, Chesapeake & Ohio, Pere Marquette and Hocking Valley to a new company never took legal effect. Commission disapproval automatically cancelled the contracts. If the unification was based on stocks purchased and held, the unification remained.

The numerous acquisitions effected through stock purchases and security exchanges finally led to the competitive buying of a character which characterized the Hill-Harriman era of the early part of the twentieth century. Strong lines bought what they needed, and paid the price demanded by market conditions. Four lines—the Baltimore & Ohio, the New York Central, the New York, Chicago & St. Louis, and the Pittsburgh & West Virginia—engaged in a running and somewhat acrid contest for the control of the Wheeling & Lake Erie. The defeated party then brought its troubles to the doorstep of the Commission. Two of these same lines—the Baltimore & Ohio, and the Pittsburgh & West Virginia—staged a contest for the control of the Western Maryland.

Further north in trunk line territory an old fashioned speculative battle finally resulted in an extraordinary strengthening of one of the strongest trunk line carriers—the Pennsylvania. L. F. Loree, president of the Delaware & Hudson—a relatively small carrier serving a bit of Pennsylvania and the eastern part of the state of New York—assumed the initiative in moving for the control of the Lehigh Valley. The latter is a prosperous property, competing vigorously and successfully for all available business in the territory. Acting through L. F. Loree, the Delaware & Hudson bought up a substantial interest in the Lehigh Valley and a controlling interest in the Wabash. The latter in turn purchased a large interest in the Lehigh Valley. The Delaware & Hudson-Wabash interest in the Lehigh Valley proved insufficient to wrest control from the

present management. And within a relatively short time, the Delaware & Hudson sold proprietary interest in the Lehigh Valley and Wabash to the Pennsylvania at a price in excess of $106,000,000. The profit accruing to the Delaware & Hudson is currently reported as exceeding $60,000,000. No individual or organization—official or unofficial; congressman or senator; governor or President; federal commission or State commission—has expressed the public interest that may be involved in these transactions.

And only within the past few months the Van Sweringens, with but little fuss or furore, quietly bought out the majority stock control of the Buffalo, Rochester & Pittsburgh. The lease of this road by the Delaware & Hudson had previously been rejected by the Commission on the ground largely that its allocation might disturb its subsequent disposition under a more comprehensive consolidation scheme. Now the property turns up again under new control on the basis purely of its private advantages to some unknown private interests. Neither the Clayton Act nor the Interstate Commerce Act apply to acquisitions by individuals; and so this transaction is not covered by any law.

In these acquisitions the Commission was not consulted. That body can say yes or no, only on being asked. But it has not been asked; it has not been invited to the friendly party. All of these plans must, however, be financed. The Commission possesses plenary jurisdiction over new security issues. The law says so; and the Commission acts upon that assumption. But the tools of corporation finance are sharp and apt. Their extraordinary efficiency a quarter of a century ago became an object of wonder in the Moore-Reid Rock Island reorganization. Now again, the observer may well ask if a dime can still buy a dollar.

Public discussion for many years prior to the passage of the Transportation Act had been directed towards the passage of legislation designed to oblige carriers to use their credit and issue their securities for the acquisition of assets used in the service of transportation. Carrier credit was not to be used for speculative purposes. Legislation was finally enacted in 1920 by which all securities issued (with unimportant exceptions) were to be passed upon by the Interstate Commerce Commission. If a proposed unification scheme, therefore, be not acceptable to that body, if, moreover, it be rejected, certainly it would not sanction its financing. That presents a problem to railroad financiers. A problem indeed—but not a serious obstacle.

The astuteness of the financial community in financing railroad unification programs has as a matter of fact not been seriously tested. The experience of the last few years does demonstrate with particular clarity the ineffectiveness of legislation aimed at controlling administrative and managerial judgment. Despite existing law, railroad financiers have had little difficulty in financing their acquisition plans. In the first place the non-operating holding company, that was rather generally supposed to have been extinct in the railroad field, has been revitalized. It is serving its function well as an instrument of finance. Operating beyond the jurisdiction of the Interstate Commerce law, it issues securities and contracts obligations freely without the necessity of subjecting its plans to governmental approval or disapproval. The holding company aided the Pennsylvania in financing its purchase of Wabash and Lehigh Valley securities. By transferring its Norfolk & Western Railway stock to the Pennsylvania Company, it enabled the latter to issue $50,000,000 of collateral trust bonds secured by this stock. Operating through a maze of non-operating holding companies the Van Sweringens also have succeeded in establishing a unified railroad system with an extraordinarily small financial investment. The Commission has twice refused its approval to their plans, first in whole and then in part. But the system remains.

Financing without Commission authorization has been facilitated by railroad ownership of physical assets not used in the service of transportation. The Delaware & Hudson for example owned some coal bearing anthracite lands. It sold them to the Hudson Coal Company, which it controls through share ownership, for $35,000,000 of its mortgage bonds. The Delaware & Hudson sold the latter through ordinary investment channels; and devoted the proceeds to the purchase of securities in the open market.

Unusually interesting has been the distribution of the burden of financing among the carriers, the control of which has just been acquired. The Kansas City Southern in 1925 obtained control of the Missouri-Kansas-Texas, and the St. Louis Southwestern. Control of the latter cost it approximately $13,500,000. The Missouri-Kansas-Texas took over this stock from the Kansas City Southern. By liquidating United States government securities and other current assets, it raised $7,000,000. This it paid over to the Kansas City Southern. The balance was made payable within ninety days after approval of the unification by the Interstate Commerce Commission. In a somewhat similar fashion, though not so directly, the Van Sweringens turned over part of the Erie and Pere Marquette stocks acquired in the open market to the Chesapeake and Ohio. Another portion was transferred to the Nickel Plate. Application for control of the Erie by the Nickel Plate and then by the Chesapeake & Ohio was disapproved by the Interstate Commerce Commission. The Chesapeake & Ohio still holds the Erie Stock; and permanent financing of its purchase is gradually being effected—partly without and partly with Commission approval.

It is the latter method—financing of extra-legal security purchases with official sanction of the Commission—that represents perhaps the most interesting illustration of governmental helplessness.

Most of the roads of the country invest a considerable part of their earnings in their property. Reinvested earnings of this character build up large surpluses; and the roads thus increase their fixed assets without increasing their fixed charges. Eventually their earning power increases; and as a result their securities attain a higher and higher measure of investment merit.

Under the terms of the ordinary mortgage, however, the roads may reimburse themselves for their outlay from earnings by selling bonds. If the previous expenditures from earnings had been made for capital purposes, the Commission cannot reject an application to sell bonds merely because of the use to which the anticipated proceeds might be put. In this manner roads have obtained the use of large sums of money for financing unifications and for speculative purchases of securities. The Kansas City Southern, the Texarkana & Ft. Smith, the New York, Chicago & St. Louis, and the Wabash are some of the roads that have issued mortgage bonds and used the proceeds to buy securities.

The paradox of paradoxes has now been attained—for public regulation of consolidation and security issues has finally increased corporate capitalization and retarded the growth of the corporate surplus.

Burlington Tests Mack Switching Locomotive

Develops 170 hp. with a weight of 30 tons on a 7-ft. 6-in. wheel-base—Other sizes being built

A 30-ton gas-electric locomotive, built by the Mack International Motor Truck Corporation, is now being tested by the Chicago, Burlington & Quincy in yard and industrial switching service near Lincoln, Neb.

This locomotive is of the central cab type, mounted on two driven axles with a wheel base of 7½ ft., and is powered with two 85-hp. engines, each of which drives its own axle through a 250-volt generator and heavy-duty, slow-speed, force-ventilated motors. This power, designed to develop a tractive force of 18,000 lb. at 30 per cent adhesion below one mile an hour, 7,000 lb. tractive force at five miles an hour, and 4,000 lb. tractive force at ten miles an hour, is sufficient to haul in excess of 650 tons at nine miles an hour on level track and 200 tons on a one-per cent grade at a lower speed (based on a train resistance of seven pounds per ton).

The locomotive truck and underframe are built to give easy access to the traction motors and air-brake equipment, with no side sheets or framing to interfere. The short wheel base allows the locomotive to operate safely on the minimum curvatures found in industrial yards, without danger of derailment. The frame, which is 10 ft. wide and 16 ft. long, forms a platform upon which the cab and power equipment is mounted.

A cab, 10 feet wide and 4 ft deep, occupying the center of the platform, contains the two control stations and instrument boards and a small stove for heating during the winter. Excellent vision in both directions is provided. The two power plants are mounted transversely at either end of the cab in separate compartments which are of such a height that the engineman looks over them when operating the locomotive. At each end of the locomotive is another compartment containing the gas tanks, sander boxes and battery box, as well as the ballast required to give the locomotive the necessary adhesion for its power. The cab has a door at the back of each control station which leads to a platform around the power plant. The roof of the cab is used for the major part of the engine cooling and is entirely covered with fin-tube radiators. Additional cooling is obtained by means of a Venturi stack at each end of this cab through which the engine exhaust induces a draft through each engine compartment similar to the induced draft in the fire-box of a steam locomotive.

The Power Equipment

The power plants are readily accessible through removable doors under the cab end windows which give access to the engines and generators directly from the cab. A distinct advantage arises from the fact that standard Mack truck engine parts used in the construction of this locomotive can be secured for repair

View Showing Easy Accesses to the Power Plant for Inspection and Repair

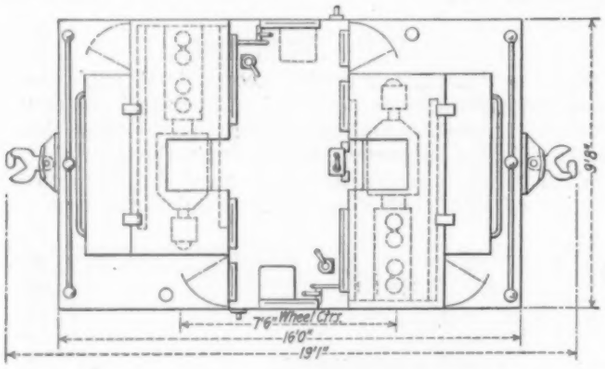
Calculated Tractive Force, Horsepower and Hauling Capacity of Mack Gas-Electric Switching Locomotives

Weight, tons			T. F.		Tonnage hauled at various speeds							
					Level			One per cent grade			Two per cent grade	
min.	max.	Std. wt.	3 m.p.h.	H.p.	3	6	9	3	6	9	3	6
10	17	12	3800	85	*468	388	280	134	80	55	70	40
16	24	18	7500	135	*702	*702	549	272	167	113	145	86
21	30	24	9000	170	*936	*936	661	326	201	134	171	104
30	45	35	13700	255	*1365	*1365	965	490	305	195	265	157
30	38	35	16000	270	*1365	*1365	1130	580	350	244	313	183
40	57	50	24000	405	*1950	*1950	1700	875	527	357	490	276
60	76	65	32000	540	*2535	*2535	2275	1165	705	475	630	370

* Figures are limited by adhesion of the drivers. This table is based on a resistance of 15 lb. per ton to start the load and 7 lb. per ton rolling resistance.

purposes at the nearest one of 105 Mack service stations available throughout the country.

The power equipment consists of two identical power units transversely mounted under the hood on each end of the cab. The power plant is an integral unit consisting of a base built up of 7-in. girders and cast-steel pedestals for securing the unit in the locomotive with resilient rubber mounting. On this base is mounted an 85-hp., 4-cylinder engine, directly connected to a 250-volt generator of ample capacity to absorb the full output of the engine. The generator shaft is extended to drive mechanically a 12-cu.-ft. Westinghouse air compressor. The engine fly wheel has bolted to it a fan which is housed and supplies air



Arrangements of the Power Plants and Cab of the Mack 30-Ton Locomotive

under pressure to give forced ventilation to the traction motors, thereby greatly increasing their rating at the low speeds required in a switching locomotive.

The engine is the standard Mack engine successfully used in heavy duty service for a number of years. It is equipped with a 12-volt generator for charging a battery which is used for lighting, for the preliminary excitation of the main generator field and for starting the engine with the starting motor. The engine temperature is controlled by use of an automotive type by-pass thermostat and a large volume pump which circulates the cooling water through radiators mounted above the roof of the cab, with ample space between the cab roof and the radiators for a free circulation of air.

The control of the locomotive is simple, consisting

General View of the 30-Ton Mack Gas-Electric Switching Locomotive

of a reverse switch, a manual throttle connected to both engines, which also operates the generator field switch, and the usual brake valve. A control station is provided at each side of the locomotive, with an instrument board for each unit mounted in the center of the cab. Locomotives are being built by the Mack Company in seven sizes, from 10 to 80 tons and 85 hp. to 540 hp. These have been developed for light-switching at industry tracks, quarries, stations, etc. The locomotive illustrated is one of the intermediate sizes. A list of the various models is shown in the table.

The use of multiple engines allows the operation of only the required power for the actual haul. The fuel economy and low initial cost of this locomotive are designed to make it an economical unit for any operation where 600 hp. or less is required. The locomotives are designed to be operated in multiple, giving greater flexibility in adapting them to both railroad and industrial switching and haulage problems.

* * *

SELLER ADDRESSED TO FURNISH MATERIAL	Material covered by this order must be furnished by the Seller to whom the order is addressed and the bill therefor must be rendered by him.
PRICES	Order must not be filled at an advance in price over last quotation on file in this office without obtaining our consent, and, where prices and terms are specified on order, they must be adhered to.
DATE OF DELIVERY	If for any reason delivery of material on this order cannot be made by date specified, this office must be advised at once, giving reason therefor.
FREIGHT CHARGES ON REJECTED MATERIAL	The Seller must pay freight charges both ways on rejected material both for specification material and wrong or defective material.
PACKING, BOXING, ETC.	No charge, unless specifically agreed upon, must be made for packing, boxing, containers, or other matters relating to preparation for shipment.
ORDER NUMBER	Order number must be marked on each package, shipping notice, invoice and on bill of lading or delivery receipt.
SHIPPING NOTICE	Notice of each shipment, giving order number and kind and quantity of material, must be sent to consignee by mail, on date of shipment.
BILLS AND INVOICES	Separate invoices must be prepared for each consignee on this order immediately after shipment, and forwarded to the Purchasing Agent accompanied by bill of lading or shipping receipt. Material on several orders for the same consignee may be covered on one bill if proper separation is made for our identification in checking. To insure prompt payment shippers must render invoices only on NATIONAL STANDARD INVOICE FORMS in triplicate.
INSTRUCTIONS FOR SHIPPING AND ROUTING	All material and supplies used in the manufacture or construction of material covered by this order must be routed, so far as possible, via THE PENNSYLVANIA RAILROAD. Shippers must mark boxes and packages and see that bills of lading or other transportation receipts are marked "ROUTE VIA THE PENNSYLVANIA RAILROAD."
LOCAL FREIGHT SHIPMENTS AND ROUTING	Freight shipments from points located on The Pennsylvania Railroad, or nearby, must be forwarded via The Pennsylvania Railroad nearest junction and bill of lading so marked.
FOREIGN FREIGHT SHIPMENTS AND ROUTING	Freight shipments from points not located on The Pennsylvania Railroad, or nearby, must be routed via The Pennsylvania Railroad nearest junction. Where definite routing is specified same must be followed. Shipments to one consignee may be consolidated in a single freight shipment providing the material on each order is plainly marked with Buyer's order number. No charges will be allowed for cartage. Shipments originating in the city to which they are consigned must be delivered by the shipper free of carrying charges, and delivery receipt obtained which must be sent with invoice. On all other deliveries made by messenger, truck, etc.; delivery receipt must be attached to invoice when forwarding same to this office. Shipments must be made in Pennsylvania Railroad equipment, if available.
PARCEL POST SHIPMENTS	Shipments weighing six pounds and less may be forwarded by insured parcel post, provided the insurance and parcel post combined charges will not exceed 75c; if the cost be greater such shipment must be specially authorized. Parcel post shipments are at risk of Seller unless forwarded insured. (Receipt must accompany invoice and weight of material, amount of insurance and parcel post must be shown separately thereon.)
LOCAL EXPRESS SHIPMENTS AND ROUTING	American Railway Express shipments are authorized from points on The Pennsylvania Railroad when weight does not exceed thirty pounds, provided express receipt shows route via The Pennsylvania Railroad. Shipments of greater weight by express must be specially authorized.
FOREIGN EXPRESS SHIPMENTS AND ROUTING	Express shipments are authorized from points other than on The Pennsylvania Railroad, on material weighing from seven to fifteen pounds, provided the express charge to destination does not exceed 85c, and express receipt shows route via The Pennsylvania Railroad at nearest junction. Shipments of greater weight by express must be specially authorized.
PAYMENTS	Payments will be made by voucher.
DRAFTS	Drafts will not be honored.
PATENTS	The Seller covenants and agrees to save harmless and indemnify the Buyer against all claims, suits, actions or proceedings by reason of alleged infringement of patents, or for patent royalties involved in consequence of the purchase and use of the material covered hereby. This covenant and agreement shall extend to all patents granted either before or after the delivery of said material to said Buyer. The Buyer shall give prompt notice to the Seller of any suits brought or proceedings begun against it, and the Seller with their counsel shall defend such suits, and Buyer shall give such information as it may possess to reasonably enable the Seller to defend such suits.
ACCIDENTS AND INDEMNITY	If it becomes necessary for the Seller, either as principal or by agent or employe, to enter upon the premises or property of the Buyer, in order to construct, erect, inspect or deliver hereunder, the Seller hereby covenants and agrees to take, use, provide and make all proper, necessary and sufficient precautions, safeguards and protections against the occurrence or happening of any accidents, injuries, damages or hurt to any person or property during the progress of the work herein covered, and to be responsible for, and to indemnify and save harmless the Buyer from the payment of all sums of money by reason of all or any such accidents, injuries, damages or hurt that may happen or occur upon or about said work, and all fines, penalties and loss incurred for or by reason of the violation of any city or borough ordinance or regulation, or the law of the State, or United States while the said work is in progress; and further agrees to procure and carry the insurance required by any Workmen's Compensation Act.
LIABILITY	Seller's obligation to deliver and Buyer's obligation to receive the material specified shall be expressly subject to fires, strikes, or other causes beyond the control of either party, and time of delivery shall be extended for the period delivery was prevented by such fires, strikes or other causes.

Instructions on the Back of the Pennsylvania's Orders for All Material and Supplies Bought

What Is the Function of the Lumber Wholesaler?

Economic justification of interests which distribute over half of the country's annual forest yield explained

In a Railway Lumber Yard

By W. W. Schupner

Secretary-Directing Manager, National-American Wholesaler Lumber Association, Inc.

WHAT does the lumber wholesaler do for railroads in their lumber purchases? That question arises occasionally in the minds of railway officers, who naturally wish to serve their roads on the most efficient basis commensurate with the value and cost of the material they buy for their principals. It is a fair and reasonable question and is entitled to a fair and frank reply.

An Intermediate but Essential Factor

In the first place, what is a lumber wholesaler? Frequently he has been confused with factors operating on the capital and credit of others. The true wholesaler buys in wholesale quantities on his own capital and credit, and, as may be necessary, supervises production, shipment and transportation, serving both producer and consumer at the same time. His responsibility and service constitute his distinguishing qualifications, and with proper information before him, the careful buyer can easily determine whether he is dealing with a real wholesaler.

To consider fully the wholesaler's economic position in the lumber business, it would be necessary to elaborate at some length. Since the purpose of this article is to outline his activities as they specifically affect railroad purchases, and not distribution through retail yards for general consumption, which is an entirely different line of trade, suffice it to say the wholesaler's service in the lumber industry is of a dual nature, for in finding markets for most of the lumber production of the United States and Canada he provides outlets for his mills and locates stock for customers, who because of their varied requirements, can not locate or purchase direct on as economical a basis of cost as can the wholesaler. The wholesaler performs functions of assembly and distribution, assembling from many sources items needed in too large quantities for economical production at any one point and distributing to many destinations portions of an output too large to be needed by single buyers.

Producing and Distributing Different Things

In the lumber business as in other businesses, there are two distinct processes—manufacture and distribution—each being equally important and requiring special knowledge of its intricacies. The distributive process is separated into wholesale and retail branches. The latter serves the needs of the local community, and normally the bulk of retail requirements are obtained through the wholesaler. While some railroad and industrial business must necessarily be handled through retail yards equipped to make immediate delivery for local consumption, most railroad purchases should not require handling through retail channels.

Most wholesalers, especially those in the railroad field, are specialists who have had years of experience in studying the needs of the railroads and best sources of supply. Such wholesalers, working from "Demand to Supply", make it their business to have producing connections to furnish, when and as needed, the materials that their railroad customers require. They came into existence to supply a definite need in the industry, otherwise they could not have survived through the intense competition of the passing years.

Wholesaler a Specialist

To supply the varied requirements of the railroads, a wholesaler must possess a knowledge of that field more extended than that of the general distributor. There is, of course, some similarity in the character of service rendered by these two types of wholesalers because the gradual lengthening of distances between sources of supply and consuming points has required all wholesalers to meet constantly fluctuating conditions and to adapt themselves to them.

A manufacturer may own his own timber, or he may contract for his log supply, but in any event it is his business to make the product best suited to his log supply. His problems are numerous, and with the best help available he strives to produce the highest grades and

suitable sizes of well-manufactured lumber at the lowest cost of production. When manufacture is completed, distribution, an entirely different process, begins.

A relatively small number of manufacturers are equipped with selling organizations for intelligent distribution of their own lumber, and where such selling institutions exist they actually engage in the wholesale lumber business because they must assume all of the selling expense and risks undertaken by the wholesaler. Even when a group of mills distributes through one outlet or is affiliated with any form of association which handles orders on a group or allocation basis, such agencies or associations are, in reality, wholesalers. Some of these merchandising agencies sell part of their production through wholesalers.

Find Buyers for Lumber

Most mills, large and small, learn that it is to their advantage to distribute through wholesalers, because the wholesaler handles their sales more efficiently and at less expense that if the mills undertook to maintain their own marketing facilities. Railroads are not necessarily interested in the fundamental reasons prompting this practice, but those mills know that their net returns are larger through the wholesaler, that they are usually paid more promptly through his cash advances, that he will properly attend to any differences which may unavoidably arise as to grades or other questions, and that he will look after the details of following shipments through to destination, etc.

The advantages which the mills derive from these sales arrangements through the wholesaler also benefit the buyers because they broaden the competition or sources of supply and make it possible for them to withhold payment to the wholesaler until shipments arrive and are checked as to tally and grade. Even if it were physically possible for many of these mills to deal directly with the railroads they could not do so because they are not in position to extend credit, good as that credit may be. Railroads are valuable customers. Some pay more promptly that others, but there have been, and still are, times when vast sums of money are due wholesalers by railroads during the process of distribution and transportation. That means credit. What is very important to railroad buyers is the fact that, in the event of grade or other controversy, the wholesaler can be reached immediately and he assumes the responsibility of making adjustments with the mill or mills which made the shipments. When it is realized that by far the largest percentage of railway and car material is handled on the basis of inspection at destination, it is readily seen that this is an important feature of lumber procurement.

Find Lumber for Buyers

The nature of the wholesaler's relationship to railroad purchases depends to some extent upon the conditions affecting both the mill, whose output he handles, and the railroad buyer as well. All mills do not manufacture railroad material and no mill manufactures railroad material alone. All railroads, moreover, do not buy material of the same species and their specifications vary considerably.

Railroad lumber requirements for car and other work are complex and this condition has resulted in the placing of most orders through wholesalers. Railroad car material is essentially the wholesaler's business. Inasmuch as no one mill could possibly produce all material for the average railroad order, many times a single mill could not even share in such business, because it could only furnish a part of the order, whereas the wholesaler, with other mills at his command and specializing in this stock, can allocate his orders so as to assemble a varied assortment advantageously.

There are many railway lumber wholesalers who are frequently called upon to assist in the purchase of timber particularly adaptable to railroad requirements. This class of stock is produced by the small mill operator, and in order to provide the capital to make such production available to railroads, wholesalers are called upon to make cash advances to those mills, running at times into thousands of dollars. To do this intelligently the wholesaler must have a first-hand knowledge of timber values and in addition be a student of human nature, as many of these advances are made without security.

Wholesalers have been of help to the railroads by cooperating with the regional advisory boards and in assisting the roads to place themselves in their present efficient operating position. On their part the railroads know, as does the entire lumber industry, that through the National-American Wholesale Lumber Association, the national spokesman for the wholesale lumber industry, there exists a standard of integrity and ethics in the membership which carries a degree of responsibility and security that makes it easier for railroad buyers to be assured that they will get what they buy and pay for.

The lumber wholesaler does not ask for any favors from his mills or his customers, but he does not want

Piling Gathered from Different Sources by Wholesalers for a Railway Pier Job

his economic position misunderstood. He has specialized in selling and has accumulated experience and knowledge regarding the consuming markets which is valuable to the mill, and he knows the available sources of lumber supply needed to meet intricate railroad specifications, which is valuable to the railroad buyer.

The wholesaler has studied the distribution problem sufficiently to know that there is an unavoidable selling expense and risk to be assumed by someone, regardless of who assumes it. He knows that mills can assume it if they wish to enter the wholesale business, and he knows that any buyer can assume it by engaging in the wholesale business. What he aims to make clear is that there is an inevitable selling expense which is not eliminated when it is absorbed by someone else. Aside from the consideration of economics, the wholesaler realizes for himself that he distributes more than half of the country's annual lumber production; he desires to meet any fair competition and asks only that the lumber he sells and the service he performs be measured value for value and dollar for dollar with that of his competitors—be they manufacturers or other distributors.

The Careless Auto Driver

THE most comprehensive review of the grade crossing death record that has recently appeared is to be found in the February number of "Connecticut Industry," a monthly pamphlet issued by the Manufacturers' Association of Connecticut, at Hartford. It is a seven-page article by John A. Droege, general manager of the New York, New Haven & Hartford. Mr. Droege tells mostly things which to railroad men are already quite familiar, but his article written as an appeal to the general public, is notable as one in which the emphasis is put in exactly the right place; and it is expressed in more incisive language than the general reader is in the habit of seeing.

The title is the familiar watchword, "Stop, Look and Listen", and the main discussion covers not only general and country-wide conditions but also those relating particularly to Connecticut. The title above ("The Careless Driver") is the head of a paragraph in which Mr. Droege shows up the astonishing records of fatilities at places *where grade crossings have been abolished;* where the only way to save the foolish from their folly is to provide four-foot parapets for highway bridges and high stone walls at the sides of the railroad lines.

From the closing paragraphs of this article we quote:

The railroad is still confronted with the necessity for large expenditures if service is to be maintained and improved and capacity increased. It seems hardly fair that the railroad should be asked to spend exceedingly large amounts to eliminate grade crossings when at all grade crossings in Connecticut in 1927 only 14 lives were lost, and the expenditure of this money in other directions would result in far greater protection to human life, especially when it is considered that the evidence clearly indicates that the careless automobile driver will find a way to kill himself, or others, even though grade crossings are eliminated, as is shown by the instances cited.

Certainly the public that travels on the highways should assume a much larger share of the cost of future grade crossing elimination than in the past, because railroad trains have been decreasing in numbers and grade crossings have been more adequately protected, at enormous costs to the railroad, while highway traffic has increased by leaps and bounds; *and accidents at grade crossings are due almost entirely to the carelessness of drivers who should not be permitted to drive automobiles under any conditions.* If the public authorities cannot control such drivers, and larger sums of money are to be spent to permit them to drive carelessly, that same public should pay the bill.

There is still another horn to the dilemma. Due to the universal use of the motor vehicle and because of the high speed at which such cars are driven, there is an increasing demand that existing overhead bridges and underpasses—which were adequate for the traffic when built,—shall now be widened, or shall be reconstructed with better alignment and greater clearances; and part of the cost is again assessed to the railroad. Apparently there is no end in sight to these expenditures; and, in a way, they impose upon the railroad a subsidy in favor of its competitors on the highway.

While the public mind is diverted by the discussion and large publicity of occasional accidents at railroad grade crossings, hundreds of other accidents on streets or public highways are overlooked. The fact is that grade crossing accidents are merely a small phase of the big automobile accident problem. The highways must be made safe, but the way to greater safety is by the exercise of the police power to control the drivers. As long as reckless and incompetent drivers handle automobiles they will be instruments of death and destruction, regardless of whether there be railroad crossings or not.

* * * *

Eastbound on the Pennsylvania, Near Woods Run, Pa.

Communications and Books

Commodity Carding Already in Force

E. St. Louis, Ill.

To the Editor:

In the *Railway Age* of December 22 there appeared an article entitled, "Classified Car Inspection Needed," submitted by C. J. Nelson, chief interchange inspector, Chicago, Ill.

This is to advise you that the members of the sub-committee of the St. Louis and East St. Louis district, which is a committee operating under the Interchange Committee of the Superintendents' Association of St. Louis and East St. Louis, presented this matter before the regular meeting of the Interchange Committee in January. Resolutions were presented that the sub-committee be instructed to make a reply relative to recommendations offered in the article by Mr. Nelson.

This committee heartily concurs in Mr. Nelson's recommendations, for the reason that in the St. Louis and East St. Louis gateway they have been operating under similar regulations since 1906. In order that all may definitely understand these regulations, we are quoting their adoption by the Superintendents' Association as of that date:

Carding of cars to be loaded at industries: All cars delivered to connecting lines to be loaded at industries shall be carded, showing the commodity for which intended, thus: to load flour, to load sewer pipe, to load machinery, including the name of the Industry.

Adopted September, 1902
Revised September, 1906
Revised April, 1913

On September 14, 1906, it was decided to print the card in triplicate, one to be tacked on the car, one to be used as a way-bill, and one for the agent's record.

Responsibility for defective equipment furnished on orders: Resolved, that railroads furnishing cars on orders for loading must inspect them before delivery, so that no cars shall be offered which are not suitable for the intended loading.

Resolved further, that where an empty car is furnished by a trunk line to a switching line, to be routed via such trunk line when loaded, if it develops that the car has a leaky roof or other defects which cause claim for damage to freight, that the trunk line is responsible for such defects and losses incident thereto.

Adopted November, 1909
Revised February, 1922

The above resolutions as quoted were drawn up and concurred in by all lines, with the full intent of preventing the receiving line from technically objecting to certain physical defects which do not render a car unsafe for movement over lines to which the lading is to be loaded.

It was further agreed and understood that if the industry refused to load on account of the general interior or leaky condition, the car could be returned to the originating line, but for no other reason. The adoption of the resolutions quoted prevented the unnecessary rejection of cars.

W. P. Elliott,
Chairman, Sub-Committee of St. Louis and East St. Louis District.

The Relation of Side Bearings to Derailments

Baltimore, Md.

To the Editor:

In your issue of February 2 is an article entitled Friction vs. Roller Side Bearings in Derailments, by E. G. Goodwin, vice-president of the Standard Coupler Company. It is evident that the research at Baltimore on truck action in curves has increased general interest in this important subject, with many resulting discussions.

It is entirely true that the writer, who was responsible for these Baltimore tests, did not realize the magnitude of the principal contributing factor causing derailments on warped track; namely, wheel slippage, and it is also true that he did not realize that this wheel slippage constituted the major part of all curving resistance. Although Wellington clearly indicated these facts over forty years ago, it is a safe statement that a large majority of railroad mechanical men in this country were not aware of these facts.

Mr. Goodwin is mistaken in his statement that, when the car derailed on entering the 10-deg. curve with the outer rail depressed, there was no relative movement of the bolsters on the derailing truck. When the leading truck is entering a curve, the swiveling action of the truck bolster on the body bolster is continuous until the car is fully in the curve, and any side-bearing friction must be overcome.

Mr. Goodwin refers to two articles on this subject in the *Railway Age* of October 27, 1928. The writer had nothing to do with the articles in this issue and asumes no responsibility for any conclusions or inferences drawn.

I think Mr. Goodwin is mistaken in his criticism of the third finding at Baltimore. He challenges the accuracy of the following statement: "When a car is in a curve and the weight on either truck on the outside rail is sufficiently reduced by track warp or car roll * * * * * * * * * the front outside wheel flange of the truck will climb before it can overcome the essential wheel slippage friction of the rear truck, or the wheel-slippage friction plus the truck-swiveling friction of the forward truck." It is not explained on what basis this statement is challenged. It is believed to be so correct as to be axiomatic.

In the test to determine the amount of the truck-swiveling friction under varying truck conditions, the pressures at the wheel flange were all taken when the truck bolster was practically at right angles with the track and, therefore, any decreasing side-bearing clearance due to pitch in the roller runway was absolutely negligible. It is believed that no appreciable difference would have been found in the resistance to swiveling friction had horizontal runways been used both above and below the roller.

As the whole side-bearing subject is of great importance in the operation of freight cars and as the plant at Baltimore is believed to be the only one in existence on which the subject can be scientifically studied, I invite Mr. Goodwin and any others interested in side bearings to take over this plant, without charge, and make such tests and in such quantities as may be necessary to clarify the whole subject of side bearings and scientifically establish the facts for the general benefit of the railroads and various manufacturers.

T. H. Symington.

Books and Articles of Special Interest to Railroaders

(Compiled by Elizabeth Cullen, Reference Librarian, Bureau of Railway Economics, Washington, D. C.)

Books and Pamphlets

Our Commerce with Latin America. Concise review of the extent of the commerce, and the interest of the Mississippi Valley in it. Map, p. 4. 9 p. Pub. by Illinois Central System, Chicago. *Apply.*

Petroleum and Coal—the Keys to the Future, by W. T. Thom, Jr. Coals used for railroad fuel are discussed in the chapter on relative importance and use of various ranks of coal, and a later chapter goes into the transportation of coal. Transportation and storage of oil are also discussed. The maps of coal- and oil-producing regions of the world will be helpful, while the survey of the influences of minerals on history in chapter I and the forecast in the last chapter "Coal and oil reserves and the future of civilization" concentrate much information in a small space. 223 p. Pub. by Princeton University Press, Princeton, N. J. $2.50.

Report of the Bridge Stress Committee of the Department of Scientific and Industrial Research. The Committee was appointed in March 1925 "to conduct researches with reference to the stresses in railway bridges, especially as regards the effects of moving loads" and this report is the result of their careful study of impact. 215 p. Illus., Diagrs. Pub. by H. M. Stationery Office, London, England. 18 shillings. Available in this country through British Library of Information, New York City.

The Standard Railroad of the World—a Brief Analysis of the Pennsylvania Railroad. Includes an historical sketch, the extent of current operations, and a map of the transcontinental rail and air route between New York and California to be opened in the spring. Illustrated. 12 p. Pub. by the National City Company, New York City. *Apply.*

The Steel Highway, by Cecil J. Allen. In chapters headed "The Fascination of the Railway," "Railway Pioneering," "Railways in Five Continents," "Railways Among the Mountains," "Railways Across the Water," "Railways in Miniature," "Railways and the Weather," "Railway Speed," "Railway Comfort" and so on, the author has brought together in an interesting way many technical and historical aspects of railroading. Illustrations are particularly good, especially the "combination of art and engineering," on the Rhaetian Railways of Switzerland and the "King George V" with its Baltimore & Ohio bell, both color plates. 144 p. Pub. by Longmans, Green & Co., New York and London, $2.25.

Periodical Articles

Across Manchuria on the Trans-Siberian, by Mme. Claude Eylan. Events and problems of a recent trip. Living Age, February, 1929, p. 442-446.

The Cape to Cairo Dream, by Albert Demangeon. "Three cross-continental railroads threaten to seize the rich trade of Africa for which Cecil Rhodes planned the famous line from Capetown to the Mediterranean." Map, p. 364. Living Age, January, 1929, p. 364-368.

Counting Tomorrow's Customers—How Will America's Growth Affect Your Business, by W. S. Thompson and P. K. Whelpton. Population estimates and trends 1920-2000. "Now it is obvious that certain kinds of transportation must be planned for a considerable time in advance if we are to have the service available when needed . . ." p. 41. "It must also be remembered that certain basic economic changes are taking place now which bid fair to relieve our present transportation system—particularly the railways—of some of its load. The development of giant power and the relocation of industry may have a marked effect in reducing the ton-miles each of us needs his freight hauled . . ." p. 42. Nation's Business, February, 1929, p. 42-43, 154-155.

Fuels—Alternative or Supplementary to Petrol for Road Vehicles Fitted with Internal Combustion Engines, by W. R. Ormandy and A. Metral. Two interesting papers on the development of gasoline substitutes and various other kinds of fuel, their economic possibilities, and experiments with different types of engines using them. Experiments throughout the world are summarized. Journal of the Institute of Transport, January, 1929, p. 120-153.

Latest Developments in American Railway Practice, by C. E. R. Sherrington. Points developed are co-operation in the railway industry, organization, passenger station design, freight terminals and transship stations, classification yards, engineering and track, grade crossings, signaling systems, automatic train control, electrification, rolling stock and motor coaches, and air services. Journal of the Institute of Transport, February, 1929, p. 218-227.

THE CHICAGO & NORTH WESTERN, which a year ago began painting its passenger trains dark green, will now apply this color to its suburban cars. When green was chosen to replace yellow it was decided to retain the traditional yellow for suburban cars but the satisfaction found with the green has led to the making of this color standard. One train at a time will be painted, so that the color of the cars in a train harmonize. The work will be completed by the end of summer.

Looking Backward

Fifty Years Ago

The executive committee of the Transportation Association, organized recently to carry out the agreement among the principal western roads to cease the practice of influencing business by means of free passes, met on February 25 at Chicago. Marvin Hughitt, general manager of the Chicago & North Western, was selected as chairman.—*Railway Age,* February 27, 1879.

The London trustees of the Atlantic & Great Western have agreed to a proposition which involves its foreclosure and sale and subsequent lease to the New York, Lake Erie & Western [both now parts of the Erie] and the latter road has accepted the arrangement. The plan of reorganization and lease contemplates laying a third rail so that the Erie will have a continuous standard gage line of 860 miles between Jersey City, N. J., and Cincinnati, Ohio, with possibilities for connections with Chicago and St. Louis.—*Railway Age,* February 27, 1879.

A contract has been signed which will insure the completion of a through route between Houston, Tex., and New Orleans, La. Three companies [all now parts of the Southern Pacific] are parties to the agreement which provides for operation under one management for a long period of years. The Morgan's Louisiana & Texas Railroad & Steamship Company will construct the section between Brashears, La., and Vermillionville [now Lafayette], the Louisiana Western will construct the section between Vermillionville and Orange, Tex., 112 miles, and the Texas & New Orleans will reconstruct the section between Orange and Houston, Tex., 106 miles.—*Railroad Gazette,* February 28, 1879.

Twenty-Five Years Ago

W. G. Bierd, assistant superintendent of the Illinois division of the Chicago, Rock Island & Pacific, has been appointed superintendent of the Amarillo division of the Chicago, Rock Island & Gulf, with headquarters at Amarillo, Tex.—*Railroad Gazette,* March 4, 1904.

The Canadian Pacific has announced its intention of establishing an executive office at Winnipeg, Man. In connection with this announcement a vice-president of the road states: "During the next 10 years I look for an almost unbroken period of railway construction throughout the Northwest Territories."—*Railway Age,* March 4, 1904.

The United States Court of Appeals at St. Paul, Minn., on February 29, affirmed the right of the Chicago Great Western to enter Omaha, Neb., from Council Bluffs, Iowa, over the Union Pacific bridge over the Missouri river, and also gave it the right to use the passenger station of the Union Pacific in Omaha.—*Railway Age,* March 4, 1904.

Ten Years Ago

An appropriation of $2,500,000 for continuing the railroad valuation work of the Interstate Commerce Commission is included in the sundry civil appropriation bill now before Congress. Last year's appropriation was $3,500,000.—*Railway Age,* February 28, 1919.

Director General Hines and a committee of the American Short Line Railroad Association have reached an agreement on a revised form of contract to be executed by short line railroads which are not being operated by the federal government. It will do away with the diversion of traffic from short line railroads and will make reparation for traffic that has been diverted.—*Railway Age,* February 28, 1919.

As the statistics of the Interstate Commerce Commission and of the Railroad Administration regarding the operating expenses of the railways in 1918 become more complete they grow startling. The final summary for the year 1918, covering 234,000 miles of line, shows an increase in operating expenses of $1,149,000,000, with advances in wages responsible for $565,000,000 or almost one-half of the total.—*Railway Age,* February 28, 1919.

Odds and Ends of Railroading

More Legal Talent

The railways should be able to recruit plenty of legal talent from their own ranks, if the present production keeps up. Albert Schweitzer is the fifth recent graduate in law to be reported in this department. He is employed in the superintendent of terminals' office of the Missouri Pacific at St. Louis.

Another Model Builder

For a railway man, George Tracey, machinist for the Long Island, has an unusual avocation. George builds ship models and has a large collection of them. In addition, he teaches the science of model-building, and is at present conducting a class of 26 boys, who are seeking proficiency in the art.

A Railway Medal-Man

Among the distinguished visitors to the recent American Legion convention in San Antonio was J. C. Graves, city passenger agent of the Missouri Pacific at New York. Graves is one of the few possessors of two distinguished service crosses. His first D. S. C. was awarded him for capturing 42 Germans single-handed, his second for volunteer messenger service during a barrage.

One Editor Who Believes in Railroads

The following was written by the editor of the Dexter, Iowa, Sentinel:

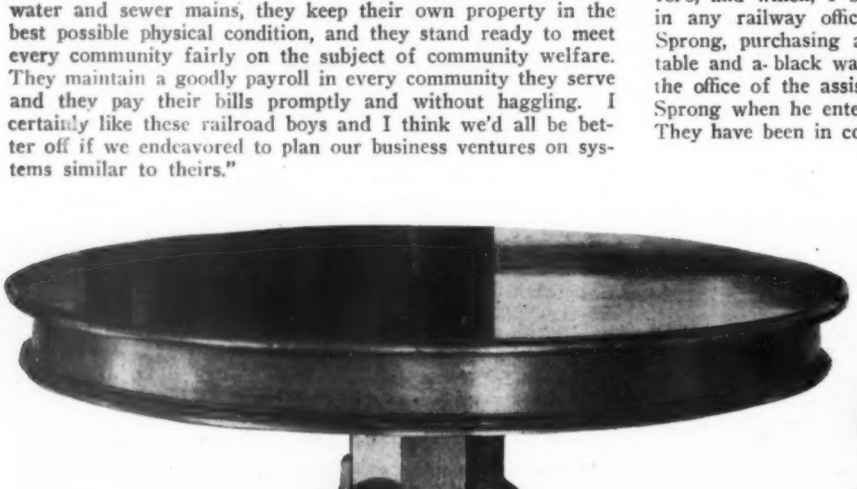
"I'm friendly toward the railroads because they are the most cordial and sympathetic co-operators in the community-building enterprise. They help us maintain our schools, they help us maintain our streets, they pay largely toward laying water and sewer mains, they keep their own property in the best possible physical condition, and they stand ready to meet every community fairly on the subject of community welfare. They maintain a goodly payroll in every community they serve and they pay their bills promptly and without haggling. I certainly like these railroad boys and I think we'd all be better off if we endeavored to plan our business ventures on systems similar to theirs."

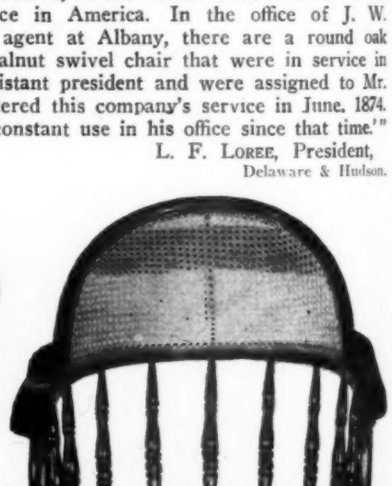
The Competition Grows Keener

"Referring further to the item entitled 'Railway Furniture' in your issue of October 20, 1928, page 780, with accompanying photographs of a Delaware & Hudson office chair and a Union Pacific desk in continuous use since January 11, 1876, and November 11, 1877, respectively. I have had our office furniture checked up and find that we have in daily use in this office a desk, a photograph of which is enclosed, which,

like the chair, has been in use continuously since January 11, 1876, and which, I believe, is the oldest wooden desk in use in any railway office in America. In the office of J. W. Sprong, purchasing agent at Albany, there are a round oak table and a black walnut swivel chair that were in service in the office of the assistant president and were assigned to Mr. Sprong when he entered this company's service in June, 1874. They have been in constant use in his office since that time.'"

L. F. Loree, President,
Delaware & Hudson.





NEWS *of the* WEEK

Tunkhannock Viaduct on the Lackawanna Main Line

THE CLEVELAND RAILWAY CLUB will hold its next meeting on Monday evening, March 4. The discussion will be on the A. R. A. Rules for 1929.

THE NEW YORK, NEW HAVEN & HARTFORD has made a general advance of four cents an hour in the wages of shopmen, the increase to be retroactive to February 1.

THE CANADIAN RAILWAY CLUB will hold its next meeting on March 11, at 8:30 p. m. at the Windsor Hotel. D. Crombie, chief of transportation of the Canadian National, will read a paper on transportation.

THE ST. LOUIS RAILWAY CLUB will hold its next meeting on Friday evening, March 8, at Hotel Statler. There will be a paper by George C. Smith, director of the Industrial Bureau, Industrial Club of St. Louis, followed by entertainment.

THE NEW ENGLAND RAILROAD CLUB will hold its next meeting at Copley-Plaza Hotel, Boston, on March 12, with a paper, illustrated by motion pictures, by G. E. Harcke of the Air Reduction Company, on "Oxygen, the Wonder-Worker." This will be the annual meeting, with election of officers.

THE NEW YORK RAILROAD CLUB will hold its next meeting at the Engineering Societies Building at 29 West Thirty-ninth street, New York, on March 15. The meeting will be devoted to a discussion on tie tamping and track maintenance, with motion pictures provided by the Ingersoll-Rand Company.

THE NEW YORK STATE PUBLIC SERVICE COMMISSION, on February 19, reaffirmed its order of November 1, directing the elimination of the grade crossing in Yonkers, N. Y., over the New York Central at Dunwoodie station, Putnam division. The railroad had objected to the widening of the pavement and other changes which made the cost of the proposed change higher than would be necessary to reproduce a highway as good as that now existing, but this objection evidently had no effect.

C. N. R. Extends Co-operative Plan to M. of W. Employees

An offer of co-operative arrangements extended by the Brotherhood of Maintenance of Way Employees has been accepted by the Canadian National and the plan will go into effect immediately on the Moncton division, after which the organization will extend until the entire system will be covered.

This co-operative agreement follows after a successful operation of the union-management co-operative policy (the so-called "Baltimore & Ohio plan") in the maintenance of equipment department.

Survey for Nicaraguan Canal Proposed

Without a record vote the Senate on February 25 passed the resolution introduced by Senator Edge, of New Jersey, authorizing an appropriation of $150,000 for a survey, by Army engineers, of a route for an interoceanic canal through Nicaragua, and also an investigation of the possibilities of enlarging the present Panama canal or any other practicable route between the Atlantic and the Pacific. The President would be authorized to enter upon negotiations for an agreement as to terms.

N. Y. C. Pensions

The pension rolls of the railroads in the New York Central System now bear 4,460 names, which number is equal to about three per cent of the total working force of 160,217. The oldest living pensioner is Christopher Flentye, a locomotive engineman of the Chicago district, 95 years old.

The New York Central pension plan was adopted January 1, 1910, since which time the total sum paid out has been $19,504,333. Mrs. M. E. Donk, agent and operator at Newark, N. Y., who was retired last September, at the age of 70, had been employed by the company for 55 years and nine months.

Signal Section Program

The tentative program for the annual meeting of the Signal section, American Railway Association, at Stevens Hotel, Chicago, on March 4 and 5, shows for the first session (Monday morning) the report of Committee I, Economics of Railway Signaling and that of Committee VIII, A. C. Automatic Block Signaling.

Monday Afternoon

Committee X, Signaling Practice; Committee IV, D. C. Automatic Block Signaling; Committee II, Interlocking.

Tuesday Morning

Address by F. Wenter, general claim agent, Chicago & North Western. Report of Committee VII, Contracts; Committee IX, Overhead and Underground Lines; Committee XI, Chemicals; Special committee on highway crossing protection.

Tuesday Afternoon

Committee V, Instructions; Committee VI, Designs.

R. B. A. Objects to Coal Bill

The Railway Business Association has sent a communication to the Senate Committee on Interstate Commerce opposing S.4490, the Federal Bituminous Coal Bill. It is stated that claims of federal jurisdiction over coal have been made on the ground that coal is an instrumentality of interstate commerce because it is consumed in railway locomotives. If this is true, the association says, the same authority could be asserted with like validity over the production of cars, rails, switches, typewriters, timetables and every article which enters into railway service. The association states further that this policy, carried to extremes, might result in "a federal dining car commission or even a federal railway pie commission."

Los Angeles Station Case

The court of appeals of the District of Columbia on February 25 decided that the Interstate Commerce Commission was in error in holding that it was without power to order the railroads serving Los Angeles, Calif., to build a union station. The decision was rendered on an appeal by the city of Los Angeles from the decision of the lower court which had denied the city's petition for a writ of mandamus to compel the commission to issue an order. The case has been the subject of much litigation in which efforts have been made to compel the railroads to build the station, first through

(*Continued on page 550*)

Operating Statistics of Large Steam Railways—Selected Items for December, 1928, Com-

Region, road and year	Average miles of road operated	Locomotive-miles: Train-miles	Locomotive-miles: Principal and helper	Locomotive-miles: Light	Car-miles: Loaded (thousands)	Car-miles: Per cent loaded	Ton-miles (thousands): Gross, Excluding locomotives and tenders	Ton-miles (thousands): Net, Revenue and non-revenue	Average number of locomotives on line: Serviceable	Unserviceable	Per cent unserviceable	Stored
New England Region:												
Boston & Albany	1928 407	194,198	204,721	19,445	4,719	65.1	240,536	90,703	106	19	15.5	32
	1927 407	204,629	219,147	24,106	4,695	63.9	251,230	91,449	105	16	12.9	6
Boston & Maine	1928 2,074	411,284	487,620	57,436	12,338	67.4	649,072	249,632	284	42	12.9	62
	1927 2,074	484,786	570,126	52,589	11,773	64.6	635,137	236,841	263	62	19.1	4
N. Y., New H. & Hart.	1928 2,104	520,075	579,921	39,005	15,353	65.2	840,056	336,524	293	68	18.8	33
	1927 2,140	572,308	618,532	38,392	14,646	64.6	785,275	303,223	322	53	14.0	44
Great Lakes Region:												
Delaware & Hudson	1928 875	324,892	434,141	45,066	9,828	60.4	630,351	289,599	236	34	12.6	77
	1927 875	336,031	448,790	53,614	9,011	60.0	575,225	263,873	248	25	9.2	79
Del., Lack. & Western	1928 998	536,780	606,161	66,537	16,759	64.4	978,885	404,164	236	58	19.7	8
	1927 998	510,731	577,240	63,969	15,685	66.4	892,606	373,249	246	53	17.8	11
Erie (inc. Chi. & Erie)	1928 2,317	915,886	988,238	78,563	37,924	61.3	2,333,942	960,807	404	110	21.5	28
	1927 2,317	938,932	1,015,271	78,174	34,006	62.8	2,059,285	853,538	417	127	23.3	34
Lehigh Valley	1928 1,343	545,133	596,162	63,796	16,379	62.9	978,735	411,312	330	83	20.1	27
	1927 1,345	546,676	596,409	67,443	15,715	61.3	948,617	391,799	361	72	16.7	63
Michigan Central	1928 1,822	523,606	545,019	20,869	17,471	59.2	1,009,560	355,601	207	45	17.9	39
	1927 1,822	517,936	545,003	21,019	15,803	59.9	897,176	310,433	218	70	24.1	64
New York Central	1928 6,459	2,043,590	2,306,882	161,308	74,387	59.2	4,698,607	1,975,538	946	394	29.4	158
	1927 6,478	1,936,310	2,162,888	160,234	68,433	59.9	4,215,493	1,742,509	1,092	313	22.3	316
New York, Chi. & St. L.	1928 1,665	644,247	650,805	7,116	20,161	60.1	1,177,599	436,442	225	55	19.7	54
	1927 1,665	618,270	625,654	7,772	18,883	61.7	1,069,820	392,004	231	50	17.8	69
Pere Marquette	1928 2,179	417,226	420,472	4,515	9,960	59.0	616,613	255,729	179	30	14.4	16
	1927 2,181	386,253	388,636	4,514	9,204	59.6	565,790	235,222	185	36	16.4	23
Pitts. & Lake Erie	1928 231	122,261	124,515	1,758	3,961	57.4	327,250	179,696	57	9	14.2	15
	1927 231	110,920	111,629	2,046	3,412	58.2	284,300	156,754	57	15	20.7	17
Wabash	1928 2,497	814,133	845,998	12,095	22,673	59.9	1,366,446	509,415	296	67	18.4	31
	1927 2,497	705,487	737,698	10,796	19,956	63.4	1,139,024	426,778	315	56	15.1	75
Central Eastern Region:												
Baltimore & Ohio	1928 5,536	1,939,769	2,317,474	162,785	54,017	58.6	3,738,452	1,718,009	1,025	213	17.2	169
	1927 5,534	1,848,333	2,158,856	168,860	49,195	59.9	3,328,115	1,543,131	1,036	240	18.8	197
Central of New Jersey	1928 691	266,284	287,139	44,037	7,314	55.6	510,958	236,207	186	23	11.0	21
	1927 691	254,846	275,932	47,491	6,773	57.1	458,419	215,583	186	30	13.8	31
Chicago & Eastern Ill.	1928 945	266,289	268,017	3,481	6,512	60.1	429,767	196,923	97	69	41.4	18
	1927 945	280,090	281,825	3,885	6,472	59.1	431,174	198,233	108	43	28.4	23
Clev., Cin., Chi., & St. L.	1928 2,371	748,023	772,872	16,703	22,056	58.6	1,475,668	670,598	315	119	27.4	15
	1927 2,373	715,890	746,530	18,140	20,365	60.4	1,359,662	634,173	346	79	18.6	47
Elgin, Joliet & Eastern	1928 407	139,229	148,783	7,153	3,741	60.8	290,230	151,010	80	13	13.7	...
	1927 461	130,753	138,987	6,307	3,400	61.9	264,079	135,156	81	11	11.8	...
Long Island	1928 396	45,232	49,036	14,387	563	54.4	36,414	13,496	49	7	12.9	3
	1927 396	44,452	47,187	13,207	522	55.6	34,637	13,183	47	13	21.6	...
Pennsylvania System	1928 10,749	3,910,410	4,474,532	408,417	126,496	60.8	8,586,478	3,922,791	2,717	348	11.4	672
	1927 10,847	3,857,061	4,323,490	371,540	115,368	61.8	7,673,322	3,482,913	2,865	377	11.6	849
Reading	1928 1,163	626,356	689,098	48,761	16,565	57.2	1,213,954	599,752	310	75	19.5	16
	1927 1,131	588,812	637,212	60,951	14,894	57.1	1,087,696	535,620	322	79	19.8	45
Pocahontas Region:												
Chesapeake & Ohio	1928 2,730	1,105,917	1,189,201	45,270	34,471	53.8	2,853,745	1,503,410	530	99	15.7	53
	1927 2,706	1,085,280	1,176,154	47,281	32,634	55.1	2,653,715	1,409,363	548	99	15.3	100
Norfolk & Western	1928 2,230	825,680	969,430	36,710	28,547	56.9	2,415,126	1,283,551	496	58	10.5	131
	1927 2,231	729,474	880,906	31,430	23,618	58.5	1,943,072	1,021,246	548	44	7.5	190
Southern Region:												
Atlantic Coast Line	1928 5,136	665,262	668,083	8,838	16,664	56.9	962,794	340,052	442	44	8.9	89
	1927 5,103	724,791	728,095	13,175	17,359	58.8	1,004,098	374,175	415	56	11.8	82
Central of Georgia	1928 1,898	256,559	258,280	4,455	6,140	67.5	336,227	134,849	135	17	11.2	11
	1927 1,898	254,317	255,739	6,839	5,832	66.3	322,421	129,466	138	19	12.4	15
Ill. Cent. (inc. Y. & M. V.)	1928 6,713	2,001,102	2,010,368	29,325	50,922	58.4	3,513,105	1,495,085	744	112	13.1	15
	1927 6,594	1,971,324	1,985,528	44,966	48,535	57.9	3,353,576	1,411,151	769	102	11.7	21
Louisville & Nashville	1928 5,066	1,539,306	1,610,086	54,539	31,263	56.9	2,222,794	1,054,024	592	109	15.5	42
	1927 5,053	1,558,992	1,617,188	53,744	30,469	58.1	2,136,591	1,016,791	614	105	14.6	62
Seaboard Air Line	1928 4,475	574,275	585,030	7,314	14,416	60.8	847,022	310,799	253	58	18.6	6
	1927 4,282	546,109	557,409	10,414	13,279	60.3	786,536	291,719	227	59	20.7	20
Southern	1928 6,679	1,445,506	1,476,371	32,319	33,923	60.3	1,997,338	785,448	848	121	12.5	116
	1927 6,718	1,333,776	1,360,505	30,017	32,057	62.6	1,806,564	702,929	823	124	13.1	79
Northwestern Region:												
Chi. & North Western	1928 8,463	1,318,292	1,383,762	25,273	31,969	62.3	1,942,890	769,025	766	112	12.7	145
	1927 8,463	1,318,988	1,379,143	24,319	30,031	61.8	1,793,824	705,192	814	121	13.0	175
Chi., Milw., St. P. & Pac.	1928 11,248	1,619,992	1,741,630	94,058	44,165	61.5	2,701,446	1,129,845	792	158	16.7	193
	1927 11,249	1,626,983	1,752,119	106,946	42,102	64.2	2,507,760	1,076,272	831	138	14.2	175
Chi., St. P., Minn. & Om.	1928 1,724	310,411	331,935	14,757	6,165	64.7	356,457	151,563	161	25	13.6	27
	1927 1,724	340,569	381,983	20,288	6,218	62.5	363,180	150,738	159	25	13.3	20
Great Northern	1928 8,381	788,439	814,266	58,631	26,115	71.8	1,489,497	719,081	504	133	20.8	83
	1927 8,164	774,536	804,791	45,660	22,773	71.9	1,292,987	604,009	559	103	15.6	129
Minn., St. P. & S. St. M.	1928 4,357	446,495	460,919	4,718	11,647	66.9	631,369	272,935	219	42	16.0	25
	1927 4,358	517,967	531,848	5,545	11,373	69.6	603,099	270,202	208	34	14.2	19
Northern Pacific	1928 6,477	709,105	750,648	46,931	22,411	72.8	1,230,600	557,935	446	118	21.0	56
	1927 6,476	775,992	828,025	49,389	22,178	73.3	1,211,969	559,747	460	149	24.4	63
Oreg.-Wash. R. R. & Nav.	1928 2,246	196,413	205,408	13,665	5,523	72.7	325,383	152,650	127	16	11.2	7
	1927 2,154	197,174	208,221	15,341	5,438	70.5	324,098	151,754	130	15	10.6	6
Central Western Region:												
Atch., Top. & S. Fe (incl. P. & S. F.)	1928 10,448	1,658,135	1,817,378	95,434	52,408	61.7	3,195,146	1,137,529	792	161	16.9	173
	1927 10,414	1,643,498	1,787,079	93,935	49,330	61.8	2,981,665	1,066,540	787	152	16.2	156
Chicago & Alton	1928 1,000	286,770	307,057	3,142	6,783	57.3	434,854	172,058	122	28	18.8	15
	1927 995	296,676	315,920	3,586	6,756	59.6	433,460	172,296	132	19	12.5	29
Chi., Burl. & Quincy	1928 9,317	1,437,572	1,488,442	55,952	43,167	62.2	2,621,102	1,205,688	719	165	18.6	54
	1927 9,320	1,622,875	1,707,379	75,065	45,378	61.6	2,834,566	1,331,471	747	145	16.3	5
Chi., Rock I. & Pacific	1928 7,564	1,433,659	1,492,693	17,469	33,643	59.0	2,099,293	824,631	541	132	19.6	45
	1927 7,575	1,347,955	1,407,165	19,066	30,858	59.9	1,871,753	734,101	583	108	15.6	87
Denver & R. G. Wn	1928 2,563	268,514	313,622	49,109	7,121	67.0	429,482	198,752	209	50	19.2	28
	1927 2,553	271,114	318,816	51,587	7,087	65.1	450,782	215,785	227	47	17.2	33
Oregon Short Line	1928 2,539	309,983	322,765	33,817	8,986	66.7	560,671	250,186	194	11	5.4	67
	1927 2,539	315,203	337,595	32,442	8,696	68.3	530,306	239,666	184	22	10.5	38
So. Pacific—Pacific Lines	1928 8,740	1,471,862	1,599,598	199,394	42,721	61.5	2,671,787	1,000,976	721	202	21.9	93
	1927 8,770	1,384,506	1,498,906	193,327	39,207	60.4	2,462,694	915,397	695	226	24.5	98
Union Pacific	1928 3,765	965,901	992,724	60,128	34,807	64.6	2,047,479	787,808	406	51	11.1	99
	1927 3,712	1,024,480	1,052,417	51,683	33,882	66.9	1,975,901	801,190	426	49	10.3	128
Southwestern Region:												
Gulf, Colo. & S. Fe	1928 1,933	248,949	259,183	6,705	8,273	61.4	515,780	218,087	132	15	10.2	41
	1927 1,933	297,746	305,451	7,932	9,115	60.1	581,164	247,921	145	18	11.0	38
Mo.-Kans.-Texas Lines	1928 3,176	460,257	470,268	11,055	14,404	56.3	903,541	347,949	187	58	23.6	60
	1927 3,176	411,116	414,523	8,389	12,464	59.0	743,720	279,620	206	31	13.0	87
Missouri Pacific	1928 7,433	1,386,170	1,439,759	44,017	38,290	61.5	2,381,555	1,010,287	534	87	14.0	15
	1927 7,369	1,364,615	1,403,045	41,944	35,101	63.6	2,117,179	910,939	574	71	11.0	45
St. Louis-San Francisco	1928 5,212	847,097	863,333	8,807	18,270	57.1	1,153,220	456,024	399	77	16.2	31
	1927 4,939	758,325	768,022	7,437	16,512	59.2	1,102,826	414,329	402	52	11.5	66
Texas & New Orleans	1928 4,708	764,643	766,343	2,672	15,837	63.0	947,652	372,585	267	66	19.8	32
	1927 4,584	780,497	783,054	3,166	15,384	59.6	954,304	374,527	257	61	19.2	29
Texas & Pacific	1928 2,015	569,336	569,336	4,009	13,835	55.3	945,480	354,816	200	15	7.1	13
	1927 2,015	433,996	434,027	8,501	10,519	58.2	672,745	249,744	177	24	11.9	10

Compiled by the Bureau of Statistics, Interstate Commerce Commission. Subject to revision.

pared with December, 1927, for Roads with Annual Operating Revenues above $25,000,000

Region, road and year	Average number of freight cars on line: Home	Foreign	Total	Per cent unserviceable	Gross ton-miles per train-hour, excluding locomotives and tenders	Gross tons per train, excluding locomotives and tenders	Net tons per train	Net tons per loaded car	Net ton-miles per car-day	Car miles per car-day	Net ton-miles per mile of road per day	Pounds of coal per 1,000 gross ton-miles, including locomotives and tenders	Locomotive miles per locomotive-day
New England Region:													
Boston & Albany	1928 3,224	4,653	7,877	4.6	17,520	1,239	467	19.2	371	29.7	7,188	187	57.9
	1927 3,848	4,935	8,783	2.9	16,801	1,228	447	19.5	336	27.0	7,248	203	65.1
Boston & Maine	1928 10,443	11,669	22,112	2.8	20,543	1,578	607	20.2	364	26.7	3,883	120	54.0
	1927 13,068	12,440	25,508	7.4	13,874	1,310	489	20.1	300	23.0	3,684	143	61.7
N. Y., New H. & Hart.	1928 15,863	16,604	32,467	10.1	21,372	1,615	647	21.9	334	23.4	5,160	120	55.3
	1927 18,663	16,518	35,181	11.2	17,619	1,372	530	20.7	278	20.8	4,570	138	56.5
Great Lakes Region:													
Delaware & Hudson	1928 9,475	5,892	15,367	3.2	23,757	1,940	891	29.5	608	34.2	10,677	146	57.3
	1927 9,836	5,412	15,248	4.0	19,846	1,712	785	29.3	558	31.8	9,728	169	59.4
Del., Lack. & Western	1928 17,127	7,989	25,116	3.7	23,131	1,824	753	24.1	519	33.4	13,062	147	73.9
	1927 18,785	6,736	25,521	3.8	21,302	1,748	731	23.8	472	29.9	12,064	159	69.0
Erie (inc. Chi. & Erie)	1928 32,121	19,756	51,877	3.9	33,368	2,548	1,049	25.3	597	38.5	13,378	122	67.0
	1927 34,383	17,466	51,849	4.4	27,152	2,193	909	25.1	531	33.7	11,884	139	64.8
Lehigh Valley	1928 22,403	9,618	32,021	9.0	24,746	1,795	755	25.1	414	26.3	9,876	164	51.5
	1927 23,681	8,656	32,337	9.6	23,899	1,735	717	24.9	391	25.6	9,393	166	49.4
Michigan Central	1928 22,009	13,954	35,963	5.5	31,283	1,928	679	20.4	319	26.5	6,296	118	72.3
	1927 23,926	12,286	36,212	3.8	27,771	1,732	599	19.6	277	23.5	5,496	128	63.4
New York Central	1928 75,653	66,082	141,735	5.1	31,379	2,299	967	26.6	450	28.6	9,866	116	59.4
	1927 78,241	63,454	141,695	4.2	27,640	2,177	900	25.5	397	26.0	8,677	124	53.3
New York, Chi. & St. L.	1928 14,342	10,006	24,348	6.1	26,450	1,828	677	21.6	578	44.4	8,457	115	75.9
	1927 15,561	9,274	24,835	5.6	24,257	1,730	634	20.8	509	39.7	7,596	120	72.6
Pere Marquette	1928 10,951	7,209	18,160	4.2	20,148	1,478	613	25.7	454	30.0	3,787	111	65.5
	1927 11,391	6,803	18,194	3.8	18,739	1,465	609	25.6	417	27.4	3,479	119	57.4
Pitts. & Lake Erie	1928 14,166	8,376	22,542	10.7	30,644	2,677	1,470	45.4	257	9.9	25,064	120	61.6
	1927 16,202	5,665	21,867	5.7	28,697	2,563	1,413	45.9	231	8.6	21,864	118	50.6
Wabash	1928 15,249	12,209	27,458	2.9	27,703	1,678	626	22.5	598	44.5	6,581	135	76.4
	1927 18,110	10,133	28,243	2.4	25,899	1,615	605	21.4	487	35.9	5,513	142	65.2
Central Eastern Region:													
Baltimore & Ohio	1928 73,549	28,531	102,080	4.8	22,444	1,927	886	31.8	543	29.1	10,010	164	64.6
	1927 79,194	26,606	105,800	5.1	20,365	1,801	835	31.4	470	25.1	8,994	172	58.8
Central of New Jersey	1928 18,062	11,280	29,342	5.9	21,698	1,919	887	32.3	260	14.5	11,027	169	51.1
	1927 16,391	13,677	30,068	5.7	18,801	1,799	846	31.8	231	12.7	10,064	172	48.3
Chicago & Eastern Ill.	1928 13,083	3,971	17,054	37.6	24,352	1,614	740	30.2	372	20.5	6,721	143	52.9
	1927 13,839	3,547	17,386	31.4	21,205	1,539	708	30.6	368	20.3	6,766	157	60.9
Clev., Cin., Chi. & St. L.	1928 22,815	19,149	41,964	4.6	27,987	1,973	896	30.4	515	28.9	9,123	126	58.7
	1927 25,016	19,706	44,722	3.7	24,955	1,899	886	31.1	457	24.3	8,621	140	58.0
Elgin, Joliet & Eastern	1928 9,323	6,884	16,207	4.4	15,612	2,085	1,085	40.4	301	12.2	11,970	140	54.1
	1927 9,690	6,146	15,836	5.3	14,428	2,020	1,034	39.8	275	11.2	9,466	150	50.9
Long Island	1928 1,625	4,077	5,702	2.2	8,126	805	298	24.0	76	5.9	1,100	381	36.5
	1927 1,683	4,237	5,920	1.4	4,388	779	297	25.3	73	5.1	1,075	341	32.9
Pennsylvania System	1928 215,061	78,767	293,828	5.8	26,333	2,196	1,003	31.0	431	22.8	11,773	136	51.4
	1927 224,524	69,346	293,870	6.1	22,631	1,989	903	30.2	382	20.5	10,358	142	46.7
Reading	1928 26,601	14,988	41,589	4.1	21,940	1,938	958	36.2	465	22.5	16,631	155	61.8
	1927 29,971	11,628	41,599	2.0	20,350	1,847	910	36.0	415	20.2	15,277	164	56.2
Pocahontas Region:													
Chesapeake & Ohio	1928 32,691	8,921	41,612	2.1	33,400	2,580	1,359	43.6	1,165	49.7	17,763	100	63.4
	1927 36,032	8,710	44,742	3.0	29,679	2,445	1,299	43.2	1,016	42.7	16,803	107	61.0
Norfolk & Western	1928 31,100	8,052	39,152	1.0	40,700	2,925	1,555	45.0	1,058	41.3	18,566	141	58.5
	1927 34,651	6,765	41,416	1.1	36,517	2,664	1,400	43.2	795	31.5	14,763	151	49.7
Southern Region:													
Atlantic Coast Line	1928 23,837	10,164	34,001	6.3	20,089	1,447	511	20.4	323	27.8	2,136	115	45.0
	1927 25,690	9,792	35,482	5.8	18,530	1,385	516	21.6	340	26.9	2,365	121	50.8
Central of Georgia	1928 4,977	4,244	9,221	4.9	18,980	1,311	526	22.0	472	31.8	2,292	143	55.8
	1927 5,199	4,314	9,513	4.1	17,803	1,268	509	22.2	439	29.8	2,201	147	54.0
Ill. Cent. (inc. Y.&M.V.)	1928 42,484	22,321	64,805	3.4	24,375	1,756	747	29.4	744	43.4	7,185	142	76.9
	1927 45,364	18,795	64,159	6.1	22,900	1,701	716	29.1	710	42.1	6,903	147	75.2
Louisville & Nashville	1928 44,533	14,530	59,063	9.6	18,788	1,444	685	33.7	576	30.0	6,711	157	76.7
	1927 45,209	14,173	59,382	9.6	16,430	1,370	652	33.4	552	28.5	6,491	171	74.9
Seaboard Air Line	1928 15,826	9,745	25,571	5.9	19,315	1,475	541	21.6	392	29.9	2,240	136	61.6
	1927 16,683	8,944	25,627	7.1	18,015	1,440	534	22.0	367	27.7	2,197	148	63.9
Southern	1928 49,127	17,029	66,156	9.0	18,848	1,382	543	23.2	383	27.4	3,794	167	50.2
	1927 46,990	17,926	64,916	5.8	17,742	1,354	527	21.9	349	25.4	3,375	176	47.3
Northwestern Region:													
Chi. & North Western	1928 47,950	27,251	75,201	6.0	20,073	1,474	583	24.0	330	22.0	2,931	143	51.8
	1927 47,417	25,102	72,519	5.6	16,927	1,360	535	23.5	314	21.6	2,688	155	48.4
Chi., Mil., St. P. & Pac.	1928 51,258	22,011	73,269	2.9	22,326	1,668	697	25.6	497	31.6	3,240	140	62.3
	1927 52,414	20,439	72,853	4.9	19,537	1,541	662	25.6	477	29.1	3,086	159	61.9
Chi., St. P., Minn. & Om.	1928 2,835	8,786	11,621	6.2	15,316	1,148	488	24.6	421	26.4	2,837	140	60.1
	1927 2,737	10,135	12,872	10.2	12,654	1,066	443	24.2	378	24.9	2,821	159	70.6
Great Northern	1928 40,654	13,271	53,925	4.0	22,701	1,889	912	27.5	430	21.7	2,768	155	44.3
	1927 42,093	11,120	53,213	4.4	19,410	1,669	780	26.5	366	19.2	2,387	177	41.4
Minn., St. P. & S. St. M.	1928 19,444	4,736	24,180	3.5	17,627	1,414	611	23.4	364	23.3	2,021	120	57.8
	1927 20,419	5,034	25,453	3.6	13,942	1,164	522	23.8	343	20.7	2,000	135	71.6
Northern Pacific	1928 37,685	9,296	46,981	6.4	23,474	1,735	787	24.9	383	21.1	2,779	161	45.6
	1927 36,474	8,380	44,854	7.3	19,707	1,562	721	25.2	403	21.8	2,788	186	46.5
Ore.-Wash. R.R. & Nav.	1928 7,848	3,820	11,668	6.1	22,124	1,657	777	27.6	422	21.0	2,193	175	49.5
	1927 8,057	3,609	11,666	5.0	20,274	1,644	770	27.9	420	21.3	2,273	193	49.5
Central Western Region:													
Atch., Top. & S. Fe (incl. P. & S. F.)	1928 56,156	16,701	72,857	5.7	29,601	1,927	686	21.7	504	37.6	3,512	120	64.7
	1927 59,261	16,338	75,599	6.2	26,880	1,814	649	21.6	455	34.1	3,304	130	64.6
Chicago & Alton	1928 9,942	4,171	14,113	4.2	22,664	1,516	600	25.4	393	27.1	5,552	120	66.7
	1927 10,651	4,498	15,149	3.4	19,271	1,461	581	25.5	367	24.1	5,585	160	68.2
Chi., Burl. & Quincy	1928 44,571	18,865	63,436	5.0	25,064	1,823	839	27.9	613	35.3	4,174	131	56.4
	1927 49.575	18.880	68.455	4.0	22,251	1,747	820	29.3	627	34.7	4,609	152	64.5
Chi., Rock I. & Pacific	1928 29,641	19,105	48,746	5.2	19,456	1,464	575	24.5	546	37.8	3,517	156	72.3
	1927 33,933	18,756	52,689	6.3	17,559	1,389	545	23.8	449	31.5	3,126	170	66.6
Denver & R. G. Wn.	1928 10,890	4,936	15,826	2.7	17,471	1,599	740	27.9	405	21.7	2,502	196	45.3
	1927 11,152	4,355	15,507	2.8	16,998	1,663	796	30.4	449	22.6	2,727	217	43.6
Oregon Short Line	1928 7,722	4,743	12,465	3.4	24,220	1,809	807	27.8	647	34.9	3,179	129	56.1
	1927 8,909	5,928	14,837	3.4	22,226	1,682	760	27.6	521	27.7	3,045	132	58.0
So. Pacific—Pacific Lines	1928 38,608	27,995	66,603	7.1	23,878	1,815	680	23.4	485	33.7	3,694	134	62.9
	1927 36.774	26,449	63,223	6.2	22,463	1,779	661	23.3	467	33.1	3,367	132	59.3
Union Pacific	1928 20,835	10,256	31,091	10.4	34,383	2,120	816	22.6	817	55.9	6,750	122	74.3
	1927 21,426	9,445	30,871	9.8	32,127	1,929	782	23.6	837	52.9	6,963	129	74.9
Southwestern Region:													
Gulf, Colo. & S. Fe	1928 9,712	4,893	14,605	4.0	29,965	2,072	876	26.4	482	29.7	3,639	100	58.3
	1927 10,142	4,672	14,814	3.2	28,268	1,952	833	27.2	540	33.0	4,137	106	62.1
Mo.-Kans.-Texas Lines	1928 16,181	7,437	23,618	6.5	26,638	1,963	756	24.2	475	34.9	3,534	104	63.4
	1927 17,325	6,205	23,530	6.3	24,557	1,809	680	22.4	383	29.0	2,840	116	57.6
Missouri Pacific	1928 27,833	21,686	49,519	3.6	23,769	1,718	729	26.4	658	40.6	4,384	135	77.1
	1927 29,634	18,414	48,048	4.5	20,685	1,551	668	26.0	612	37.1	3,988	146	72.3
St. Louis-San Francisco	1928 24,293	9,281	33,574	3.3	18,443	1,361	538	25.0	438	30.7	2,822	167	59.1
	1927 23,280	7,972	31,252	3.6	18,175	1,454	546	25.1	428	28.8	2,706	166	55.1
Texas & New Orleans	1928 11,891	16,655	28,546	4.8	17,504	1,239	487	23.5	421	28.4	2,553	111	74.4
	1927 12,629	15,628	28,257	5.2	17,183	1,223	480	24.3	428	29.5	2,636	118	79.6
Texas & Pacific	1928 6,630	10,174	16,804	3.6	20,780	1,661	623	25.6	681	48.1	5,680	107	85.7
	1927 6,852	7,873	14,725	5.6	18,384	1,550	575	23.7	547	39.6	3,998	125	70.9

News of the Week

(Continued from page 547)

an order of the California commission, which was held invalid by the courts; and later by an order from the Interstate Commerce Commission, which held that it would be in the public interest but that it had not power to issue the order asked for.

C. N. R. Net 28.6 Per Cent Greater in 1928

The statement of earnings and expenses of the Canadian National, exclusive of the lines east of Levis and Diamond Junction and those comprised in the Central Vermont, shows gross earnings in 1928 of $276,631,921. This total compares with gross earnings in 1927 of $248,716,374, an increase of $27,915,546, or 11.22 per cent over the previous year.

Operating expenses amounted to $218,248,343, as compared with a total of $203,315,684 during 1927, an increase of $14,932,659, or 7.34 per cent. As a result, net for the year 1928 reached a total of $58,383,577 as against $45,400,690, in 1927, an increase during 1928 of $12,982,887, equivalent to 28.60 per cent.

Because of these favorable financial conditions the operating ratio of the system during 1928 was reduced to 78.89 per cent., in comparison with 81.75 per cent. for 1927.

C. N. R. Pension Plans

Legislation to unify and extend the pension plans now in existence on some sections of the Canadian National has been introduced in the House of Commons at Ottawa by Charles A. Dunning, Minister of Railways. In explaining the legislation Mr. Dunning said: "At the present time there are two pension arrangements on the Canadian National; one with respect to the former government railways, known as the Intercolonial provident fund, and the other with respect to the former Grand Trunk system. There is no legislative authority for any pension system which would be applicable to the other employees of the Canadian National, such as the employees of the former Canadian Northern and the Grand Trunk Pacific and all the other lines now comprising the Canadian National. The intention of this bill, and the one which will follow immediately, is to make it possible to extend to all employees of the Canadian National the provisions of the present Grand Trunk pension plan."

Special Train for P. & S. Meeting

Arrangements have been made for a special train from Chicago and for special cars from St. Louis, Minneapolis and St. Paul, to accommodate persons attending the annual convention of the purchases and stores division of the A. R.A., to be held at the Palace hotel, San Francisco, on June 24-26. The train will leave Chicago on the evening of June 19 and will travel by way of the Chicago & North Western-Union Pacific-Southern Pacific. On arrival at Sacramento, it is planned to stop the train for an hour to afford passengers an opportunity to inspect the store facilities which the Southern Pacific maintains there. Owing to the problem of getting special cars for travel during the summer, all members of the division are being urged through a circular to complete their plans for attending the convention early and arrange for reservations on the special train and special cars promptly.

Interchange Rule Date Extended

The effective date of interchange Rule 66, making car owners responsible for periodical repacking of journal boxes, has been extended from March 1, 1929, to January 1, 1930. This extension has been granted by the general committee of the American Railway Association, Mechanical division, at the request of a number of railroad members because they are not yet fully prepared to meet the specifications covering reclaimed oil and waste; and the Committee on Lubrication will, in its report this year, outline processes to meet the specifications which it is expected will clear up many questions and remove any necessity for a further extension of the effective date of this rule.

A study of replies to the questionnaire dated December 3, 1928, on boring or broaching of journal bearings, has influenced the Committee on Lubrication to recommend that the boring and broaching of journal bearings, which is now a mandatory provision of paragraph 11 of the specifications (see page 89 of current code of Interchange Rules), be made an optional requirement.

Broken Rail Causes Peoria Terminal Accident

Five passengers were killed and 125 injured, 12 seriously, when a broken rail caused the derailment of a passenger train on the Peoria Terminal at Hollis, Ill., five miles south of Peoria, on the morning of February 20. The train consisted of eight wooden coaches, loaded with miners on their way to work in a mining district about fifteen miles south of Peoria. It was proceeding at from 20 to 25 miles an hour when a rail broke under the train. The engine and the first two coaches remained on the track, but the following six coaches were derailed. The first four of these coaches were thrown down a 25 ft. embankment and rolled another 25 ft. on to the adjoining right-of-way of the Toledo, Peoria & Western. The last two coaches in the train left the track, but remained upright on the embankment. All of the deaths and serious injuries occurred in the four coaches that fell down the embankment.

The broken rail was of 60 lb. section. The temperature was 7° below zero at the time of the accident, and this extreme cold was a contributing cause to the broken rail.

Union Pacific Increases Wages of Mechanical Employees

The Union Pacific, on February 23, following a week's conference with representatives of the Shop Employees' Association, effected an agreement which provides for wage increases ranging from 2 cents to 5 cents an hour for 10,787 mechanical department employees on that railroad, the Los Angeles & Salt Lake, the Oregon-Washington Railroad & Navigation Company and the Oregon Short Line. The new contract, effective March 1, awards a wage increase of 5 cents an hour to machinists, blacksmiths, boiler makers, electricians, sheet metal workers, welders, car men, helpers with more than 18 months' experience, fourth year apprentices, third year apprentice helpers and third year freight car apprentices. An increase of 3 cents an hour was awarded to helpers with less than 18 months' experience, second and third year apprentices, first year apprentice helpers and second year freight car apprentices while first year apprentices and first year freight car apprentices were given an increase of 2 cents an hour and second year apprentice helpers' wages 4 cents. Coach cleaners and other shop forces with more than one year's experience were increased 2 cents an hour. The increases will involve an additional payroll expenditure of approximately $1,000,000 annually.

"The Uncertain Judgments of Juries"

In an action under the Federal Employees' Liability Act for injuries received by the plaintiff, who was employed in a yard to put sand in engine boxes and to turn switches, when he jumped from an engine into an uncovered drain which ran between the tracks, the Supreme Court of the United States holds that, the conditions being constant and of long standing, and the evidence requiring a finding that the plaintiff had long known the location of the drain and the condition at the place, the dangers attending jumping from engines in the vicinity of the drain, especially in the dark, were obvious, plaintiff must be held to have fully understood and appreciated the risk, and the railroad was entitled to a directed verdict. Judgment for plaintiff was therefore reversed. The court said: "Defendant was not bound to maintain its yard in the best or safest condition; it had much freedom in the selection of methods to drain its yard and in the choice of facilities and places for the use of its employees. Courts will not prescribe standards in respect of such matters or leave engineering questions such as are involved in the construction and maintenance of railroad yards and the drainage systems therein to the uncertain and varying judgments of juries."—D. L. & W. v. Koske. Decided February 18, 1929. Opinion by Mr. Justice Butler.

Erie Directors Approve $32,269,423 Budget

As a part of its rebuilding plan the board of directors of the Erie recently approved a budget amounting to $32,269,423 for the carrying forward of a program of additions to equipment, new transportation facilities and for construction purposes.

Of this amount, $12,541,551 will be ex-

pended for new locomotives and cars and new marine equipment. New rails, ties, ballast and other maintenance and improvement of roadway are allowed a budget of $5,096,542. The transportation department has been allotted $6,894,699, while grade elimination and other engineering projects have been estimated to cost approximately $5,096,542. The last two items of expense will include the improvement of old and the construction of new passenger stations, shop and engine house improvements, facilities to operation, building of sidings and yard tracks, and terminal and warehouse improvements.

Approximately $3,000,000 of this amount will be spent in the improvement of docks, piers and terminal facilities in New York City and the immediate vicinity. The remaining items of the budget approved will be utilized for maintenance of equipment and other miscellaneous items.

Bronze Relief of General Palmer Given to Denver Station

A bronze bas-relief of General William J. Palmer, who was active in railway construction in Colorado after the Civil war and who at one time was president of the Denver & Rio Grande and the Rio Grande Western, was presented to the Denver Union station by Colorado college on February 12. The bronze is the work of Mrs. Evelyn B. L. Batchelder, of Windsor, Conn., and is a gift to the college from George F. Peabody, one of the founders of the college and and associate of General Palmer in the work of making a survey for the Union Pacific from Kansas City to Denver.

Mr. Palmer entered railway service in 1853 as a rodman on the Hempfield Railroad of Pennsylvania and was later with the Pennsylvania. From 1861 to 1870 he was treasurer and manager of construction of the Kansas & Pacific (now part of the Union Pacific) and was in charge of the construction of the extension from Kit Carson to Denver. At the time he entered upon the work, there was no material in sight and yet he accomplished the grading of the roadbed, the procuring of the ties and rails, the laying of the track and the building of the bridges for a distance of 150 miles in 150 days.

From 1870 to 1883 he was president of the Denver & Rio Grande and from the latter date to June, 1901, he was president of the Rio Grande Western. For several years he was president of the Mexican National and in 1904 he was second vice-president of the Mexican Northern and president of the Mexican National Construction Company.

Supreme Court Sifts Evidence

An employee of a railroad company voluntarily took the place of a brakeman who had been spotting the cars being loaded by an independent contractor employed by the railroad company with excavated dirt by a steam shovel stationed beside the track. He first mounted the running board by the side of the shovel house in the position the brakeman had occupied. Shortly thereafter, for some unexplained reason—possibly to get away from the heat of the sun—he got on the jack arm, and while standing there was struck by the iron ladder when the boom swung into position for loading a car, receiving injuries resulting in his death. Without determining whether the case was properly submitted to the jury to determine whether the employee at the time of the accident was engaged within the scope of his employment by the railroad company or was merely aiding the contractor as a volunteer, the Supreme Court of the United States holds, in an action for his death under the Federal Employees' Liability Act, that there was no substantial evidence that there was any negligence upon the part of the railroad company in failing to furnish a safe place in which to work. The evidence was undisputed that there were several places in which the man could have stood in spotting cars, all of which were reasonably safe and well adapted to the performance of the work, and in which he could not have been struck by the swinging boom. Judgment of the South Carolina Supreme Court on a verdict for the plaintiff administrator was reversed. Atlantic Coast Line v. Davis. Decided February 18, 1929. Opinion by Mr. Justice Lanford.

"Shadows vs. Substance"

"The New York Central Railroad," says the Daytona Beach (Fla.) News Journal "is 'permitted' by the Interstate Commerce commission to synthesize its magnificent system of affiliated roads, of which it has controlled over 80 per cent of the stock. In other words, the New York Central is 'permitted' to unify the accounting sytem of the various railroads involved.

"It is rather amusing to observe the delivery of this 'mouse' out of the labors of the 'mountain' of unification of various railroad groups that has been under consideration and been urged both by the executive and by congress for so many years past. The Interstate Commerce commission might accomplish something more real by concerning itself with constructive action toward the railroads in the middle west, and more especially in the northern part, where bankruptcy or near bankruptcy of the railroads is the rule rather than the exception. The Minneapolis & St. Louis system, running through an exceedingly rich agricultural section, is in receivership and barely earns operating expenses, without the ability to renew equipment or to pay interest justly due to its bondholders. The Wisconsin Central; Chicago & Alton; Chicago & Great Western; Chicago & Eastern Illinois and other great railroads in that section are cases in point. The St. Louis & San Francisco railway, prosperous enough in its operations in the southwest, has petitioned the Interstate Commerce commission for authority to abandon part of its lines in Missouri because the revenues are not sufficient to warrant operation.

"Treating the railroad problem as a whole in this vast country is just as fallacious as the custom of applying to large ethnological, national or religious groups certain merits or demerits instead of gauging each individual according to the facts that apply in the individual case. Society at large is too prone to generalize; it takes less thinking and less research. The interests of all of the states in the solution of the railroad problem is common to all the people, but each section has its particular needs that deserve special attention."

Retroactive Mail Pay Case in Supreme Court

The question as to the power of the Interstate Commerce Commission to make its orders readjusting rates for the transportation of the United States mail, after re-examination retroactive to the date of the filing of the application for re-examination, was argued before the Supreme Court of the United States on February 25 in cases brought by the United States against the New York Central, as lessee of the Boston & Albany, and the Nevada County Narrow Gauge. A similar question is involved in the recent order of the Interstate Commerce Commission ordering an increase in rates for the railroads generally, which involves about $45,000,000 in back payments for three years.

The cases argued concern the commission's order of December 13, 1923, as subsequently modified, under which rates were ordered increased retroactive to February 25, 1921, the date when the railway applied for a re-examination. The Postoffice Department refused to pay the additional amount and the railroad filed suit in the Court of Claims to collect $724,718, which was allowed by that court. Solicitor General Mitchell, arguing for the government, said the principal question is one of statutory construction and that Congress intended by the law of 1916, which established a new basis for the establishment of mail rates by the commission, to provide for a retrospective readjustment of the rates but for readjustments only for the future on subsequent re-examination. Frederick H. Wood, representing the railways, pointed out that the 1916 act made the carriage of the mails by the roads compulsory and that the compensation to be fixed by the commission represents the power to determine just compensation for the taking of private property for public use. George H. Fernald, Jr., also of counsel for the respondents, elaborated upon this point, contending that as the government is bound to pay a just and reasonable rate as of the time of the taking, the rate subsequently found by the commission to be reasonable should be paid from the date of the petition. Mr. Wood described the nature of mail pay proceedings before the commission to show that they involve the collection and analysis of extensive data which usually takes two years or more.

C. N. R. to Purchase and Build Lines

The three-year branch line program of the Canadian National involving the construction of over 700 miles of lines to cost a little over $28,000,000 was introduced in the House of Commons at Ottawa last week, the 17 bills being passed

through four stages and referred to the House Committee on Railways and Canals. Speeches were made in the debate in the House on Friday of last week in which the Minister of Railways and Canals, Charles A. Dunning, announced that the friction or conflict between the interests of the Canadian Pacific and the Canadian National had been almost entirely removed, while Richard B. Bennett, Conservative leader, urged that the publicly-owned road be treated as a privately-owned road in the matter of branch lines. Mr. Dunning on the other hand made the suggestion that the privately owned road be treated in the same way as the publicly-owned road, that the Canadian Pacific be compelled to complete its lines within three years or forfeit the charters. The Canadian National was obliged to complete within three years, and some other members thought it unfair to that system when the Canadian Pacific, under the present system, was able to get charters from Parliament with no obligation for completion of the roads.

Mr. Dunning also told the House the government's intentions as to acquisition of other lines for the Canadian National He spoke, in part, as follows:

"The new program is considerable in its extent. It will represent 701 miles of new railway to be constructed by the Canadian National system within the next three years, at a total estimated cost of $28,749,000. In this connection I should say, however, that the other great railway corporation has also indicated by advertisement its intention to ask for power from this parliament to construct a very considerable mileage of new lines.

"It is proposed by the management that the Canadian Pacific and the Canadian National jointly purchase the railways known as the Edmonton, Dunvegan & British Columbia, the Pembina Valley and the Central Canada, the combined names signifying what we usually know as the Peace River lines and also the Alberta Great Waterways owned by the government of Alberta. It is also intended upon the recommendation of the management to propose the purchase of the Quebec Oriental railway and the Atlantic, Quebec & Western railway, which two lines together comprise what are usually known as the Gaspe lines, serving the Gaspe peninsula in the province of Quebec. In New Brunswick, although the negotiations between the management of the Canadian

Operating Revenues and Operating Expenses of Class I Steam Railways in the United States

Compiled from the Monthly Reports of Revenues and Expenses for 184 Steam Railways, Including 16 Switching and Terminal Companies.

FOR THE MONTH OF DECEMBER, 1928 AND 1927

Item	United States		Eastern District		Pocahontas Region		Southern Region		Western District	
	1928	1927	1928	1927	1928	1927	1928	1927	1928	1927
Average number of miles operated	240,578.89	239,410.26	59,194.37	59,149.25	5,633.30	5,620.95	40,139.82	39,821.62	135,611.40	134,818.44
Revenues:										
Freight	$a6,7,183,922	$334,901,486	$158,967,302	$140,922,323	$19,363,428	$16,685,040	$48,704,590	$46,304,109	$140,148,602	$130,990,014
Passenger	a76,522,687	b81,891,941	40,029,200	41,678,868	1,470,542	1,637,175	9,880,758	11,135,346	25,142,187	27,440,552
Mail	12,025,436	9,972,825	4,730,651	3,758,877	240,961	212,049	1,620,861	1,432,820	5,432,963	4,569,079
Express	13,785,861	14,257,453	6,225,542	6,004,783	275,831	346,132	1,841,759	1,986,928	5,442,729	5,919,610
All other transportation	16,713,118	15,889,131	9,246,406	8,466,110	227,499	216,098	1,018,077	1,022,040	6,221,136	6,184,883
Incidental	9,961,705	9,921,781	5,338,451	5,423,423	330,207	336,450	987,235	1,084,516	3,305,812	3,077,392
Joint facility—Cr.	460,136	1,267,060	d738,605	422,079	11,057	20,352	144,742	126,186	522,670	698,443
Joint facility—Dr.	316,754	374,653	96,074	143,222	4,121	1,852	26,282	38,169	190,277	191,410
Ry. operat'g revenues	495,815,839	467,727,024	223,702,873	206,533,241	21,915,404	19,451,444	64,171,740	63,053,776	186,025,822	178,688,563
Expenses:										
Maintenance of way and structures	61,199,324	69,926,901	24,115,025	31,273,595	2,120,422	2,534,874	8,599,931	9,239,885	26,363,946	26,878,547
Mainten'ce of equipm't	95,684,669	99,289,408	45,622,495	45,799,955	3,749,678	3,757,005	12,321,859	13,449,497	33,990,637	36,282,951
Traffic	10,400,292	10,237,533	3,869,631	3,797,046	271,013	268,022	1,883,318	1,897,288	4,376,330	4,275,177
Transportation	174,625,820	179,450,550	82,371,254	83,898,375	5,487,265	5,693,254	21,735,752	23,141,811	65,031,549	66,717,110
Miscellaneous operat'ns	4,553,048	4,594,856	2,280,684	2,201,345	44,387	79,762	448,773	499,367	1,779,204	1,814,382
General	12,768,405	16,711,415	3,700,068	7,727,819	638,672	589,439	2,068,129	2,230,355	6,361,536	6,163,802
Transportation for investment—Cr.	1,661,297	2,082,161	358,682	349,826	4,987	17,686	355,586	246,976	942,042	1,467,673
Ry. operat'g expenses	357,570,261	378,128,502	161,600,475	174,348,309	12,306,450	12,904,670	46,702,176	50,211,227	136,961,160	140,664,296
Net revenue from railway operations	138,245,578	89,598,522	62,102,398	32,184,932	9,608,954	6,546,774	17,469,564	12,842,549	49,064,662	38,024,267
Railway tax accruals	35,107,570	26,665,012	14,774,341	10,166,120	2,187,876	2,147,278	4,297,174	3,780,658	13,848,179	10,570,956
Uncollectible ry. rev's	395,699	164,871	286,965	47,689	2,277	2,900	36,169	46,156	70,288	68,126
Ry. operating income	102,742,309	62,768,639	47,041,092	21,971,123	7,418,801	4,396,596	13,136,221	9,015,735	35,146,195	27,385,185
Equip't rents—Dr. bal.	6,843,796	6,359,892	3,735,236	3,289,143	d528,001	d445,456	383,750	529,921	3,252,811	2,986,284
Joint facility rent—Dr. balance	1,512,843	2,144,173	447,173	1,147,711	8,997	4,282	191,507	108,557	865,166	883,623
Net railway operating income	94,385,670	54,264,574	42,858,683	17,534,269	7,937,805	4,837,770	12,560,964	8,377,257	31,028,218	23,515,278
Ratio of expenses to revenues (per cent)	72.12	80.84	72.24	84.42	56.15	66.34	72.78	79.63	73.62	78.72

FOR TWELVE MONTHS ENDED WITH DECEMBER, 1928 AND 1927

Average number of miles operated	240,243.20	239,190.08	59,223.87	59,288.76	5,627.77	5,618.47	40,109.98	39,735.30	135,281.58	134,547.55
Revenues:										
Freight	4,688,760,282	4,649,717,869	2,009,587,917	2,010,980,078	232,735,356	245,424,790	601,219,517	627,128,148	1,845,217,492	1,766,184,853
Passenger	c900,326,853	c976,185,616	473,441,831	502,664,561	16,871,042	20,020,509	112,693,886	127,299,821	297,320,094	326,200,725
Mail	104,317,532	95,999,683	40,311,047	36,455,262	2,627,570	2,431,309	15,111,797	14,199,474	46,267,118	42,913,638
Express	142,446,829	143,414,134	64,977,246	67,114,274	3,035,467	3,322,225	18,106,141	18,317,800	56,327,975	54,659,835
All other transportation	207,879,887	206,598,070	117,671,041	115,063,275	2,335,355	2,501,651	12,218,397	13,032,925	75,655,094	76,000,219
Incidental	125,989,631	128,969,503	63,632,095	64,958,332	3,597,888	4,475,202	12,650,486	13,715,755	46,109,162	45,820,214
Joint facility—Cr.	12,177,728	14,076,676	3,893,721	5,550,922	143,297	184,465	1,789,112	1,864,257	6,351,598	6,477,032
Joint facility—Dr.	4,137,706	4,931,764	1,286,468	1,640,111	58,141	27,938	371,859	420,998	2,421,238	2,842,717
Ry. operat'g revenues	6,177,761,036	6,210,029,787	2,772,228,430	2,801,146,593	261,287,834	278,332,213	773,417,477	815,137,182	2,370,827,295	2,315,413,799
Expenses:										
Maintenance of way and structures	845,612,453	879,496,192	349,412,261	369,017,398	38,366,500	38,687,580	110,901,022	119,753,511	349,932,670	352,037,703
Mainten'ce of equipm't	1,174,424,259	1,229,219,401	548,880,322	580,780,989	53,474,253	57,484,046	154,093,485	163,341,693	417,976,199	427,612,673
Traffic	125,048,356	120,720,821	46,448,636	44,829,467	3,254,062	3,181,650	20,983,667	21,026,698	54,361,991	51,683,006
Transportation	2,097,151,102	2,167,566,246	981,118,492	1,024,131,882	67,026,744	73,272,212	267,401,814	286,158,100	781,604,052	784,004,052
Miscellaneous operat'ns	56,141,392	56,203,917	26,273,562	26,125,907	908,818	988,512	5,807,209	6,058,243	23,151,803	23,031,255
General	189,860,626	193,204,557	82,339,259	88,017,745	7,250,490	6,804,352	25,096,340	25,280,909	75,174,537	73,101,551
Transportation for investment—Cr.	15,757,927	17,685,230	2,939,572	3,098,698	311,843	559,690	1,162,959	1,602,679	11,343,553	12,424,163
Ry. operat'g expenses	4,472,480,261	4,628,725,904	2,031,532,960	2,129,804,690	166,969,024	179,858,662	583,120,578	620,016,475	1,690,857,699	1,699,046,077
Net revenue from railway operations	1,705,280,775	1,581,303,883	740,695,470	671,341,903	94,318,810	98,473,551	190,296,899	195,120,707	679,969,596	616,367,722
Railway tax accruals	395,066,478	381,598,590	166,177,712	155,168,746	20,194,933	21,869,640	51,147,678	50,871,495	157,546,155	153,688,709
Uncollectible ry. rev's	1,589,976	1,514,032	882,932	578,016	24,769	48,846	220,338	263,933	461,937	623,237
Ry. operating income	1,308,624,321	1,198,191,261	573,634,826	515,595,141	74,099,108	76,555,065	138,928,883	143,985,279	521,961,504	462,055,776
Equip't rents—Dr. bal.	91,602,467	88,043,588	46,899,173	44,658,947	d6,690,110	d5,907,763	4,112,319	6,195,702	47,281,085	43,096,702
Joint facility rent—Dr. balance	23,888,111	25,006,077	11,642,443	12,265,000	1,153,634	1,088,996	1,012,986	1,126,720	10,079,048	10,525,361
Net railway operating income	1,193,133,743	1,085,141,596	515,093,210	458,671,194	79,635,584	81,373,832	133,803,578	136,662,857	464,601,371	408,433,713
Ratio of expenses to revenues (per cent)	72.40	74.54	73.28	76.03	63.90	64.62	75.40	76.07	71.32	73.38

a Includes $3,110,624 sleeping and parlor car surcharge. b Includes $3,187,632 sleeping and parlor car surcharge. c Includes $39,643,036 sleeping and parlor car surcharge. d Deficit or other reverse items. e Includes $40,201,323 sleeping and parlor car surcharge.

Compiled by the Bureau of Statistics, Interstate Commerce Commission. Subject to revision.

National railways and the government of New Brunswick are not complete, it is proposed to purchase the St. John & Quebec railway, usually known as the St. John valley, and the Quebec, Montreal & Southern railway, presently owned by the Delaware & Hudson."

Meetings and Conventions

The following list gives names of secretaries, date of next or regular meetings and places of meetings.

AIR BRAKE ASSOCIATION.—T. L. Burton, 165 Broadway, New York City. Next meeting, April 30-May 3, 1929, Stevens Hotel, Chicago. Exhibit by Air Brake Appliance Association.

AIR BRAKE APPLIANCE ASSOCIATION.—Fred Venton, Crane Company, 836 So. Michigan Blvd., Chicago. Meets with Air Brake Association.

AMERICAN ASSOCIATION OF FREIGHT TRAFFIC OFFICERS.—J. D. Gowin, 112 W. Adams St., Chicago.

AMERICAN ASSOCIATION OF GENERAL BAGGAGE AGENTS.—E. L. Duncan, 332 S. Michigan Ave., Chicago. Next meeting, June 25, 1929, Troutdale Inn, Denver, Col.

AMERICAN ASSOCIATION OF PASSENGER TRAFFIC OFFICERS.—W. C. Hope, C. R. R. of N. J., 143 Liberty St., New York.

AMERICAN ASSOCIATION OF RAILROAD SUPERINTENDENTS.—J. Rothschild, Room 400, Union Station, St. Louis, Mo. Next annual convention, June 4-7, 1929, St. Regas Hotel, Mexico City.

AMERICAN ASSOCIATION OF SUPERINTENDENTS OF DINING CARS.—L. M. Jones, Supt. of Sleeping and Dining Cars, C. M. St. P. & P., Chicago.

AMERICAN ELECTRIC RAILWAY ASSOCIATION.—J W. Welsh, 292 Madison Ave., New York. Annual convention, September 28-October 4, 1929, Atlantic City, N. J.

AMERICAN RAILROAD MASTER TINNERS' COPPERSMITHS' AND PIPE FITTER'S ASSOCIATION.—C. Borchert, 202 North Hamlin Ave., Chicago.

AMERICAN RAILWAY ASSOCIATION.—H. J. Forster, 30 Vesey st., New York, N. Y.
Division I.—Operating J. C. Caviston, 30 Vesey St., New York, N. Y.
Freight Station, Section—R. O. Wells, Freight Agent, Illinois Central Railroad, Chicago.
Medical and Surgical Section.—J. C. Caviston, 30 Vesey St., New York.
Protective Section—J. C. Caviston, 30 Vesey St., New York. Annual meeting, April 16-18, 1929, Atlanta-Biltmore Hotel, Atlanta, Ga.
Safety Section.—J. C. Caviston, 30 Vesey St., New York. Annual meeting April 23-25, 1929, Claypool Hotel, Indianapolis, Ind.
Telegraph and Telephone Section.—W. A. Fairbanks, 30 Vesey St., New York. Next convention, Sept. 10-12, 1929, Hotel St. Paul, St. Paul, Minn.
Division II.—Transportation.—G. W. Covert, 431 South Dearborn St., Chicago. Next meeting, April, 1929.
Division III.—Traffic.—J. Gottschalk, 143 Liberty St., New York.
Division IV.—Engineering.—E. H. Fritch, 431 South Dearborn St., Chicago, Ill. Annual convention, March 5-7, 1929, Palmer House, Chicago. Exhibit by National Railway Appliances Association.
Construction and Maintenance Section.—E. H. Fritch.
Electrical Section.—E. H. Fritch.
Signal Section.—H. S. Balliet, 30 Vesey St., New York. Next meeting, March 4-5, 1929, Hotel Stevens, Chicago.
Division V.—Mechanical.—V. R. Hawthorne, 431 South Dearborn St., Chicago, Ill. Annual meeting, June 25-28, 1929, Alexandria Hotel, Los Angeles, Cal.
Equipment Painting Section.—V. R. Hawthorne, 431 South Dearborn St., Chicago. Annual meeting, September 10-12, 1929, Muehlbach Hotel, Kansas City, Mo. Exhibit by Supply Men's Association.
Division VI.—Purchases and Stores.—W. J. Farrell, 30 Vesey St., New York, N. Y. Annual meeting June 24-26, 1929, Palace Hotel, San Francisco.
Division VII.—Freight Claims.—Lewis Pilcher, 431 South Dearborn St., Chicago, Ill. Annual meeting, May 21-24, 1929, Hotel Willard, Washington, D. C.
Division VIII.—Motor Transport.—George M. Campbell, American Railway Association, 30 Vesey St., New York, N. Y.
Car Service Division.—C. A. Buch, 17th and H. Sts., N. W., Washington, D. C.

AMERICAN RAILWAY BRIDGE AND BUILDING ASSOCIATION.—C. A. Lichty, C. & N. Ry., 319 N. Waller Ave., Chicago. Annual convention, October 15-17, 1929, Roosevelt Hotel, New Orleans, La. Exhibit by Bridge and Building Supply Men's Association.

AMERICAN RAILWAY DEVELOPMENT ASSOCIATION. E. L. Taylor, Asst. to V. P., N. Y., N. H. & H., New Haven, Conn. Annual meeting, May 22-24, 1929, Lamar Hotel, Houston, Tex.

AMERICAN RAILWAY ENGINEERING ASSOCIATION.—(Works in co-operation with the American Railway Association, Division IV). E. H. Fritch, 431 South Dearborn St., Chicago. Annual convention, March 5-7, 1929, Palmer House, Chicago. Exhibit by National Railway Appliances Association.

AMERICAN RAILWAY MAGAZINE EDITORS' ASSOCIATION.—Miss Page Nelson Price, Norfolk & Western Magazine, Roanoke, Va.

AMERICAN RAILWAY TOOL FOREMEN'S ASSOCIATION.—G. G. Macina, C. M., St. P. & P. R. R., 11402 Calumet Ave., Chicago. Annual convention, September 11-14, 1929, Hotel Sherman, Chicago. Exhibit by Supply Association of the American Railway Tool Foremen's Association.—Secretary: C. C. Ziegler, Greenfield Tap & Die Co., 13 So. Clinton St., Chicago.

AMERICAN SHORT LINE RAILROAD ASSOCIATION.—T. F. Whittelsey, Union Trust Bldg., Washington, D. C. Next meeting, May, 1929.

AMERICAN SOCIETY OF MECHANICAL ENGINEERS.—Calvin W. Rice, 29 W. 39th St., New York. Railroad Division, Marion B. Richardson, 30 Church St., New York.

AMERICAN WOOD PRESERVERS' ASSOCIATION.—H. L. Dawson, 228 N. Lasalle St., Chicago. Annual convention, January 28-30, 1930, Seattle, Wash.

ASSOCIATION OF RAILWAY CLAIM AGENTS.—H. D. Morris, District Claim Agent, North Pacific Ry., St. Paul, Minn. Next meeting, June 19-21, 1929, Statler Hotel, Detroit, Mich.

ASSOCIATION OF RAILWAY ELECTRICAL ENGINEERS.—Jos. A. Andreucetti, C. & N. W., Room 413 C. & N. W. Station, Chicago. Annual meeting, October 22-25, 1929, Hotel Sherman Chicago. Exhibit by Railway Electrical Supply Manufacturers' Association.

ASSOCIATION OF RAILWAY EXECUTIVES.—Stanley J. Strong, 17th & H Sts., N. W., Washington, D. C.

ASSOCIATION OF RAILWAY SUPPLY MEN.—E. H. Weaver, Westinghouse Air Brake Co., 80 E. Jackson Blvd., Chicago. Meets with International Railway General Foremen's Association.

BRIDGE AND BUILDING SUPPLY MEN'S ASSOCIATION.—Annual exhibit at convention of American Railway Bridge and Building Association.

CANADIAN RAILWAY CLUB.—C. R. Crook, 129 Charon St., Montreal, Que.

CAR FOREMEN'S ASSOCIATION OF CHICAGO.—G. K. Oliver, Chicago & Alton, Chicago. Regular meetings, 2nd Monday in month, except June, July and August, Great Northern Hotel, Chicago.

CAR FOREMEN'S ASSOCIATION OF LOS ANGELES.—J. W. Krause, 514 East Eighth St., Los Angeles, Calif. Regular meetings, second Friday of each month, 514 East Eighth St., Los Angeles.

CAR FOREMEN'S ASSOCIATION OF ST. LOUIS, MO.—F. G. Wiegmann, 720 N. 23rd St., East St. Louis, Ill. Meetings first Tuesday of each month, except July and August. Broadview Hotel, East St. Louis, Ill.

CENTRAL RAILWAY CLUB.—Harry D. Vought, 26 Cortlandt St., New York. Regular meetings, 2nd Thursday each month, except June, July, August, Hotel Statler, Buffalo, N. Y.

CHIEF INTERCHANGE CAR INSPECTORS' AND CAR FOREMEN'S ASSOCIATION.—(See Master Car Builders' and Supervisors' Association.)

CINCINNATI RAILWAY CLUB.—D. R. Boyd, 811 Union Central Bldg., Cincinnati, Ohio. Meetings, 2nd Tuesday in February, May, September and November.

CLEVELAND RAILWAY CLUB.—F. L. Frericks, 14416 Alder Ave., Cleveland, Ohio. Meetings, first Monday each month, except July, August, September, Hotel Hollenden, Cleveland.

INTERNATIONAL RAILROAD MASTER BLACKSMITHS' ASSOCIATION.—W. J. Mayer, Michigan Central R. R., Detroit, Mich. Next meeting, August 20-22, 1929, Fort Shelby Hotel, Detroit, Mich. Exhibit by International Railroad Master Blacksmith's Supply Men's Association.

INTERNATIONAL RAILROAD MASTER BLACKSMITHS' SUPPLY MEN'S ASSOCIATION.—W. A. Champieux, Oxweld Railroad Service Co., 80 E. Jackson Blvd., Chicago.

INTERNATIONAL RAILWAY FUEL ASSOCIATION.—L G. Plant, 80 E. Jackson Blvd., Chicago. Next meeting, May 7-10, 1929, Hotel Sherman, Chicago. Exhibit by International Railway Supply Men's Association.

INTERNATIONAL RAILWAY GENERAL FOREMEN'S ASSOCIATION.—Wm. Hall, 1061 W. Wabash Ave., Winona, Minn.

INTERNATIONAL RAILWAY SUPPLY MEN'S ASSOCIATION.—S. A. Witt, Detroit Lubricator Co., 820 S. Michigan Blvd., Chicago. Meets with International Railway Fuel Association.

MASTER BOILER MAKER'S ASSOCIATION.—Harry D. Vought, 26 Cortlandt St., New York. Annual meeting, May 21-24, 1929, Hotel Biltmore, Atlanta, Ga.

MASTER CAR BUILDERS' AND SUPERVISORS' ASSOCIATION.—A. S. Sternberg, Belt Ry. of Chicago, Polk and Dearborn Sts., Chicago.

NATIONAL ASSOCIATION OF RAILROAD TIE PRODUCERS.—Roy M. Edmonds, 1252 Syndicate Trust Bldg., St. Louis, Mo. Annual convention, April 23-25, 1929, Arlington Hotel, Hot Springs, Ark.

NATIONAL ASSOCIATION OF RAILROAD AND UTILITIES COMMISSIONERS.—James B. Walker, 270 Madison Ave., New York. Next convention, August 27-30, 1929, Glacier National Park, Mont.

NATIONAL RAILWAY APPLIANCES ASSOCIATION.—C. W. Kelly, 1014 South Michigan Ave., Chicago. Exhibit at A. R. E. A. convention.

NATIONAL SAFETY COUNCIL.—Steam Railroad Section: A. W. Smallen, C. M. St. P & P., Chicago.

NEW ENGLAND RAILROAD CLUB.—W. E. Cade, Jr., 683 Atlantic Ave., Boston, Mass. Regular meetings 2nd Tuesday in month, excepting June, July, August and September, Copley-Plaza Hotel, Boston, Mass.

NEW YORK RAILROAD CLUB.—Harry D. Vought, 26 Cortlandt St., New York. Regular meetings, 3rd Friday in month, except June, July, and August.

PACIFIC RAILWAY CLUB.—W. S. Wollner, 64 Pine St., San Francisco, Cal. Regular meetings 2nd Tuesday in month, alternately in San Francisco and Oakland.

RAILWAY ACCOUNTING OFFICERS' ASSOCIATION.—E. R. Woodson, 1116 Woodward Building, Washington, D. C. Annual meeting, April 30-May 3, Hotel Cleveland, Cleveland, O.

RAILWAY BUSINESS ASSOCIATION.—Frank W. Noxon, 1406 Packard Bldg., Philadelphia, Pa. Annual meeting, November, 1929, Hotel Stevens, Chicago.

RAILWAY CAR DEPARTMENT OFFICERS' ASSOCIATION. (See Master Car Builders' and Supervisors' Association.)

RAILWAY CLUB OF PITTSBURGH.—J. D. Conway, 515 Grandview Ave., Pittsburgh, Pa. Regular meetings, 4th Thursday in each month, except June, July and August, Fort Pitt Hotel, Pittsburgh, Pa.

RAILWAY ELECTRICAL SUPPLY MANUFACTURERS' ASSOCIATION.—Edward Wray, 9 S. Clinton St., Chicago. Meets with Association of Railway Electrical Engineers.

RAILWAY EQUIPMENT MANUFACTURERS' ASSOCIATION.—F. W. Venton, Crane Co., 836 S. Michigan Ave., Chicago. Meets with Traveling Engineers' Association.

RAILWAY FIRE PROTECTION ASSOCIATION.—R. R. Hackett, Baltimore & Ohio R. R., Baltimore, Md. Annual meeting, October 15-17, 1929.

RAILWAY SUPPLY MANUFACTURERS' ASSOCIATION.—J. D. Conway, 1841 Oliver Bldg., Pittsburgh, Pa. Meets with Mechanical Division and Purchases and Stores Division, American Railway Association, June, 1930, (No exhibit at 1929 meeting.)

RAILWAY TELEGRAPH AND TELEPHONE APPLIANCE ASSOCIATION.—G. A. Nelson, 30 Church St., New York. Meets with Telegraph and Telephone Section of A. R. A., Division I.

RAILWAY TREASURY OFFICERS ASSOCIATION—L. W. Cox, 1217 Commercial Trust Bldg., Philadelphia, Pa.

ROADMASTERS' AND MAINTENANCE OF WAY ASSOCIATION.—T. F. Donahoe, Gen. Supvr. Road, Baltimore & Ohio, Pittsburgh, Pa. Exhibit by Track Supply Association. Next convention, Stevens Hotel, Sept. 19-21, 1929, Chicago.

ST. LOUIS RAILWAY CLUB.—B. W. Frauenthal, Union Station, St. Louis, Mo. Regular meetings 2nd Friday in month, except June, July and August.

SIGNAL APPLIANCE ASSOCIATION.—F. W. Edmunds, West Nyack (Rockland Co.), N. Y. Meets with A. R. A. Signal Section.

SOUTHEASTERN CARMEN'S INTERCHANGE ASSOCIATION.—Clyde Kimball, Inman Shops, Atlanta, Ga. Meet semi-annually.

SOUTHERN AND SOUTHWESTERN RAILWAY CLUB.—A. T. Miller, P. O. Box 1205, Atlanta, Ga. Regular meetings, 3rd Thursday in January, March, May, June, September and November. Ansley Hotel, Atlanta.

SOUTHERN ASSOCIATION OF CAR SERVICE OFFICERS.—R. G. Parks, A. B. & A. Ry., Atlanta, Ga.

SUPPLY MEN'S ASSOCIATION.—E. H. Hancock, (Treasurer), Louisville Varnish Co., Louisville, Ky. Meets with A. R. A. Div. V. Equipment Painting Section.

TRACK SUPPLY ASSOCIATION.—L. C. Ryan, Oxweld Railroad Service Co., 80 E. Jackson Blvd., Chicago. Meets with Roadmasters' and Maintenance of Way Association.

TRAVELING ENGINEERS' ASSOCIATION.—W. O. Thompson, Gen. Supt., R. S., New York Central, Buffalo, N. Y. Annual meeting, September 24-28, 1929, Hotel Sherman, Chicago. Exhibit by Railway Equipment Manufacturers' Association.

WESTERN RAILWAY CLUB.—W. J. Dickinson, 189 West Madison St., Chicago. Regular meetings, 3rd Monday each month, except June, July and August.

Traffic

The Senate Committee on interstate commerce has voted not to consider the bill introduced by Senator Glass to repeal the Hoch-Smith resolution.

The Associated Traffic Clubs of America will hold their seventh annual meeting at the Park Central Hotel, New York, on April 10 and 11.

The Minneapolis, St. Paul & Sault Ste. Marie, in conjunction with the Canadian Pacific, has established package car service from Chicago to Regina, Sask., which will afford sixth morning delivery, a saving of 24 hr. over previous schedules.

The Missouri Pacific's motor coach operations, it was announced in St. Louis on February 26, now cover 2,700 route miles with the prospect of being extended to 4,000 miles within a month.

The Central Vermont announces that in connection with the Canadian National, it has put on a new train, known as the "Dairy," leaving Chicago daily at 9 p.m., by which freight is delivered in southern Vermont on the third day and in southern New England on the fourth morning.

At the twenty-fifth regular meeting of the Southeast Shippers' Advisory Board at Montgomery, Ala., on March 8, T. C. Powell, president of the Chicago & Eastern Illinois, will speak on "Railroad Consolidations". A history of the development of the lumber industry will be presented by A. G. T. Moore, traffic manager of the Southern Pine Association, New Orleans, La., while Edward A. O'Neal, president of the Alabama Farm Bureau Cotton Association, will review the cotton industry's development east of the Mississippi.

Mail Rates for Short Lines

The Interstate Commerce Commission on February 25 made public a decision finding, upon re-examination, that the Denver & Salt Lake was entitled to higher rates for the transportation of mail after August 1, 1927. Rates for mail transportation on 12 short lines in intermountain and Pacific coast territory, upon re-examination, were found to be fair and reasonable; and upon reconsideration of the cases of 21 other western short lines the commission affirmed its previous findings, which had established increased rates on 12 of the 21 roads.

Regional Advisory Board Meetings

The following regional advisory boards will meet in March: Southwest Shippers' Advisory Board on March 7 at Waco, Tex.; the Southwest Shippers' Advisory Board on March 8, at Montgomery, Ala.; the Pacific Coast Transportation Advisory Board on March 15 at Los Angeles, Cal.; the Allegheny Regional Advisory Board on March 21, at Washington, Pa.; the Trans-Missouri-Kansas Shippers' Advisory Board on March 27, at Topeka, Kan.; and the New England Shippers' Advisory Board on March 28, at Boston, Mass.

Lake Cargo Coal Rate Case Moot?

The Supreme Court of the United States, which on February 19 and 20 heard arguments on the validity of the Interstate Commerce Commission's order of February, 1928, which directed the railroads serving the southern district coal fields to cancel their proposed reduction of 20 cents a ton in their lake cargo coal rates, has directed the counsel in the case to file separate briefs on the question as to whether the matter in issue has not become moot, as the result of the compromise rates filed by the railroads concerned, which the commission allowed to become effective on January 1. The attorneys strongly urged the court to pass upon the issue involved as to the validity of the commission's order, which held unjustified the reduction made by the southern roads to meet a cut it had ordered in the rates from the northern coal field without a finding that the rates would be unreasonable or unduly discriminatory but because of their relation to the other rates.

Second Class Rates to Compete with Motor Coaches

Railroads operating between Chicago and California have placed second class passenger rates in effect in an effort to recapture traffic lost to motor coaches. The eastbound rates are effective from February 1 to March 2 while the westbound fares will be in effect from March 15 to April 30. The roads asked permission to establish these lower rates, for a limited time, to determine the practicability of second class service in meeting motor coach competition. The rates are similar to the homeseekers' rates that existed prior to 1917, good only in coaches, and reclining chair cars.

During the first seven days in which the new rates were effective a record business moved east out of California, while during the remaining time the traffic was still above normal. The new one way rate is $52.50 compared with the standard rate of $79.84. With the establishment of the low fare, the motor coach rate was reduced from $50 to $44. The railroad rates established from California to other points are Milwaukee, Wis., $53.75; St. Louis, Mo., Memphis, Tenn., and New Orleans, La., $47.50; Omaha, Neb., Council Bluffs, Ia., and Ft Worth, Tex., $40 and Denver, Colo., $30. The rates do not permit stop overs.

Reading Begins Interstate Motor Coach Operation

The Reading Transportation Company, the motor coach subsidiary of the Reading, established highway service between Philadelphia and Atlantic City on February 28, paralleling its rail line between these points. This motor coach line will connect with the "Along-the-Shore" service which the company now operates from Atlantic City southward to Cape May. The motor coach service will be operated in conjunction with and supplementary to the Reading's seashore train service.

Club type motor coaches will be operated between Reading Terminal, Philadelphia, and Atlantic City, Chelsea, Ventnor, Margate, Longport and Ocean City. Stops will be made to pick up and discharge Philadelphia passengers at Hammonton, Elwood, Egg Harbor and Absecon. The customary fares of $1.25 one way, and $2 round-trip will apply between Philadelphia and Atlantic City, and $1.50 one way and $2.25 round-trip between Philadelphia and Ocean City, these being the rates charged by other motor coach lines operating between these points.

The initial southbound service will consist of trips leaving Philadelphia daily at 8 a.m., 10 a.m., 12 Noon, 2 p.m., 4 p.m., 6 p.m. and 8 p.m., with additional trips as required. The schedule northbound will be similar, leaving Atlantic City at the odd hours beginning at 9 a.m. The service will soon be augmented with a fleet of new and luxurious motor coaches which will be purchased. Motor coach terminal facilities will be established at Reading Terminal, Philadelphia, and at the Reading Station in Atlantic City. The White Horse Pike will be used between Philadelphia and Atlantic City, and coaches will then proceed over the present route to Ocean City.

The company on February 27 applied to the Public Service Commission of Pennsylvania for authority to operate motor coaches between Philadelphia and Pottsville.

Hoch-Smith Resolution in Supreme Court

Arguments as to the validity of the Interstate Commerce Commission's interpretation of the Hoch-Smith resolution in the California fruit rate case were heard by the Supreme Court of the United States on February 25, on an appeal by the railroads from the decision of the district court for the northern district of California which had denied their application for an injunction restraining enforcement of the commission's order.

After having dismissed a complaint seeking a reduction of the same rates in 1925 the commission in 1927 ordered a reduction in the rate on deciduous fruits other than apples from California to eastern points from $1.73 to $1.60, describing the latter as the "lowest possible lawful rate" compatible with the maintenance of adequate transportation. The railroads, represented by Herman Phleger, took the position that the rate ordered was confiscatory and that the resolution did not contemplate the reduction of a reasonable rate. He contended that the commission, in reducing a rate on the ground that the industry was depressed, without finding that the depression was due to freight rates, had wrongly construed

the resolution and that if its construction was proper the resolution was unconstitutional. J. Stanley Payne, who argued for the commission, contended that the reduced rate was a reasonable one without the Hoch-Smith resolution and that it was within the lower part of a zone of reasonableness but sufficiently above a confiscatory rate to be compatible with the maintenance of adequate transportation.

Mr. Phleger said the commission had ordered the rate reduced to the "irreducible minimum," whereas the law and the Constitution require that each rate shall yield the carriers all proper costs and a substantial profit. Many of the roads involved were not making the "fair return." This is in effect, he said, to repeal or amend Section 15a. Mr. Payne contended, on the other hand, that the question of the economic condition of the industry was only one of the considerations on which the commission reduced the rate, and that it had much evidence before it which was not at the time of the 1925 decision, and that before prescribing the reduced rate it had found the $1.73 rate unreasonable.

Several of the Justices questioned Mr. Payne as to whether the commission had not done something which it could not have done without the Hoch-Smith resolution, after he had said that the commission had interpreted the resolution as establishing no new standard of law. Justice Butler asked if the resolution affected the definition of a reasonable rate and when Mr. Payne said it did not, he asked if a reasonable rate is the "lowest possible lawful rate," etc. Mr. Payne's reply was that a reasonable rate cannot be determined with mathematical accuracy but that there is a zone of reasonableness. He also contended that the reduction in carrier revenues would not be so great as indicated by the reduction in rate because the commission increased the carload minimum weight.

A. P. Matthew, representing the California Growers' & Shippers' Protective League, devoted most of his time to combatting the argument as to confiscation in the railroad brief, saying that there was nothing in the record in the way of cost studies that could command the confidence of the court because they included the effect of branch-line and l.c.l. traffic.

THE FIRST YEAR of operation since the standard revenue provided by the Railways Act of 1921 came into effect, the decreased revenue of the British Railways during 1928 indicates an unsatisfactory period, according to the Department of Commerce. The revenue for the past year showed a decrease of approximately £10,000,000 ($48,600,000), as compared with the revenue of 1927. This fall in revenue has been credited to the decrease in traffic resulting from industrial sluggishness. Merchandise traffic decreased by 10 per cent and coal and mineral traffic by 11 per cent as compared with 1927. At the present time the prices of stores and materials used are between 50 and 60 per cent higher than those ruling in 1913, while salaries and wages are 130 per cent higher.

Equipment and Supplies

Erie 1929 Budget Calls for $11,511,851 Expenditure for Rolling Stock

The Erie Railroad has approved a budget for 1929 calling for an expenditure of $11,511,851 for new locomotives and cars. The program includes the purchase of 20 additional heavy fast freight locomotives known as the Berkshires type, and 15 heavy switching locomotives, 40 other locomotives will be re-equipped with labor-saving and efficiency-improving devices to enlarge their capacity. The new equipment will also include 2,500 modern heavy-duty freight cars to replace old equipment retired from service. Of these 500 will be steel box cars 40 ft. long and 500 steel automobile cars, both types to be equipped with extra large doors; 1,000 steel hopper cars of 70 tons' capacity; and 500 steel low side gondola cars. For passenger service, there will be 30 all-steel suburban coaches, 10 express cars and 5 gas-electric cars. The company's marine fleet will also be increased by four new steel car floats each with a capacity for 16 cars, 20 open lighters hand hoist operated, one Diesel lighter, 12 refrigerator barges and two gasoline lighters to cost about $1,029,700.

Locomotives

THE WESTERN PACIFIC has ordered five Mikado type locomotives from the American Locomotive Company.

THE CENTRAL OF NEW JERSEY is inquiring for five eight-wheel switching locomotives.

THE ERIE is inquiring for 20 locomotives of the 2-8-4 Berkshire type and 15 eight-wheel switching locomotives. See item on the Erie budget above noted.

THE SOUTH AFRICAN RAILWAYS have ordered eight Pacific and four Mountain type locomotives from the Baldwin Locomotive Works.

THE UNION PACIFIC has ordered 25 three-cylinder 4-12-2 type locomotives and 20 extra 12-wheel tenders from the American Locomotive Company. These locomotives will have one 27 by 31 in. and two 27 by 32 in. cylinders and a total weight in working order of 496,500 lb. In the *Railway Age* of February 16, it was reported that this company contemplated buying this equipment.

Freight Cars

THE SOUTHERN PACIFIC is inquiring for 250 tank cars and 65 drop-end gondola cars.

THE REPUBLIC IRON & STEEL COMPANY is inquiring for 73 flat bottom gondola car bodies of 70 tons' capacity.

THE INTERNATIONAL HARVESTER COMPANY is inquiring for 16 hopper cars of 70 tons' capacity.

THE SOUTH AFRICAN RAILWAYS, Johannesburg, South Africa, are inquiring for 300 cattle wagons of 20 tons' capacity.

THE ST. LOUIS-SAN FRANCISCO has ordered 300 steel underframes from the Pullman Car & Manufacturing Corporation.

THE MAINE CENTRAL has ordered 1,000 box cars from the Standard Steel Car Company. Inquiry for this equipment was reported in the *Railway Age* of January 12.

THE WHEELING & LAKE ERIE has ordered 100 flat cars of 50 tons' capacity from the Standard Steel Car Company. Inquiry for this equipment was reported in the *Railway Age* of January 12.

THE UNION REFRIGERATOR TRANSIT COMPANY has ordered 50 refrigerator cars 40 ft. long and 35 tons' capacity, from the American Car & Foundry Company.

THE ERIE is now inquiring for 1,000 hopper cars of 70 tons' capacity, 500 gondola cars of 70 tons' capacity, 500 box cars of 40 tons' capacity, and 500 automobile cars of 40 tons' capacity. See item on the Erie budget above noted.

THE CHESAPEAKE & OHIO has ordered 1500 hopper bottom gondola cars of 50 tons' capacity from the American Car & Foundry Company and 500 from the Richmond Car Works, Inc. Inquiry for this was reported in the *Railway Age* of February 2.

The MISSOURI PACIFIC has ordered 500 box cars from the American Car & Foundry Company and 500 automobile cars from the Mt. Vernon Car Manufacturing Company. This is in addition to orders placed by this road and reported in the *Railway Age* of January 12.

THE NEW YORK CENTRAL is inquiring for the following cars:

1,000 steel box cars of 55 tons' capacity
1,000 steel automobile box cars of 55 tons' capacity
500 steel gondola cars of 70 tons' capacity
500 self-clearing hopper cars of 70 tons' capacity
1,000 steel high-side drop-bottom gondola cars of 70 tons' capacity
300 steel flat cars with wooden floors of 55 tons' capacity.

Passenger Cars

THE CHICAGO & NORTH WESTERN is inquiring for five baggage and mail cars.

THE NORTHERN PACIFIC is inquiring for five mail and express cars 70 ft. long.

THE ATCHISON, TOPEKA & SANTA FE has ordered two dining cars from the Pullman Car & Manufacturing Corporation.

THE GREAT NORTHERN RAILROAD has ordered one 73-ft. single power plant gas-electric rail motor car, from the J. G. Brill Company.

THE DETROIT & MACKINAC has ordered one 73-ft. single power plant passenger, baggage and mail gas-electric rail motor car, from the J. G. Brill Company.

THE HUNTINGDON & BROAD TOP MOUNTAIN RAILROAD & COAL COMPANY has ordered one 73-ft. double power plant passenger and baggage gas-electric rail motor car, from the J. G. Brill Company.

THE RICHMOND, FREDERICKSBURG & POTOMAC has ordered from the J. G. Brill Company a gas-electric rail motor car. The car will have Westinghouse electric equipment with torque control.

THE BALTIMORE & OHIO is inquiring for six mail and baggage cars with 30-ft. compartment, four mail and baggage cars with 15-ft. compartment, 100 express cars and 15 baggage cars, 70 ft. long.

Machinery and Tools

THE ATCHISON, TOPEKA & SANTA FE is inquiring for a 32-in. crank shaper, an 18-in. lathe, three radial drills, a 24-in. shaper, a 20-in. drill and an upright hammer.

Signaling

THE NEW YORK CENTRAL has ordered from the Union Switch & Signal Company material for electro-mechanical interlockings at Bryan, O., and Vickers, O.

THE LEHIGH VALLEY has ordered from the General Railway Signal Company apparatus for remote switch operation at Green's Bridge, N. J.; Easton, Pa., and Flagtown, N. J.

Santa Fe to Signal 622 Miles

The Atchison, Topeka & Santa Fe has ordered from the Union Switch & Signal Company the largest amount of automatic block signaling material which has been ordered at one time for a number of years. This order includes 1100 T-2 semaphore signals, 70 color-light signals, 5600 relays, 1200 instrument cases, 650 switch circuit controllers, 60 low voltage switch machines, and 125 relay boxes. Following are the principal locations:

AUTOMATIC BLOCK SIGNALS ON A. T. & S. F.

From	To	Miles of Road S.T.	D.T.
Ottawa Junc., Ks.	Ottawa	..	1
Ottawa	Richmond	15	..
Iola, Ks.	Chanute	17	..
Burston, Ks.	Hutchinson	..	12
Wellington, Ks.	Attica	47	..
White Eagle, Ok.	E. O. Junc.	58	..
Gallinas, Col.	Raton, N. M.	..	13
Sears, Ks.	Casa, Col.	193	..
Pueblo, Col.	Bragdon	11	..
Tangier, Ok.	Gage	14	..
Canyon, Tex.	Ft. Sumner	147	..
Ricardo, N. M.	Buchanan	26	..
Nicholls, Tex.	Revision	31	..
Goldthwaite, Tex.	Mullen	11	..
Colton, Cal.	Highgrove	..	3
Oceanside, Cal.	Delmar	18	..
Atwood, Cal.	Fullerton	5	..

The approximate total mileage of signaling to be installed on the eastern lines is 92 miles; on the western lines, 461 miles; on the Gulf lines, 43 miles and on the Coast lines, 26 miles.

Supply Trade

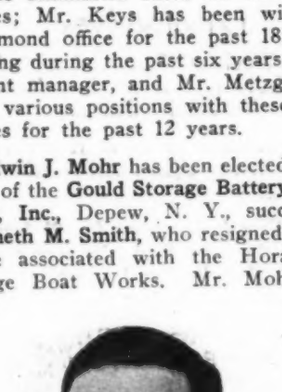
The Reading Iron Company, Reading, Pa., has established a new district sales office at New Orleans, La., under the direction of **George E. Tyson,** 1216 Hibernia Bank building. Mr. Tyson was formerly of the Reading district.

H. H. Wood, formerly chief engineer of the Laclede Steel Company, St. Louis, has joined the industrial department of the **Timken Roller Bearing Company,** Canton, Ohio. For the present his headquarters will be at Canton.

Addison McGarrett, formerly with the Niles Tool Works Company, Hamilton, Ohio, is now with the **Pratt & Whitney Company,** Hartford, Conn., as manager of its new agency sales department. Mr. McGarrett had been with the Niles Tool Works Company for more than 25 years. **Robert P. Brinkman,** who assisted Mr. McGarrett at Hamilton, is with him at Hartford.

George F. Jones has been retired at his own request, after a service of 29 years as head of the Richmond office of the **Baldwin Locomotive Works** and the **Standard Steel Works Company. William B. Keys** has been appointed manager and **Lewis W. Metzger, Jr.,** has been appointed assistant manager, of the Richmond office for both companies; Mr. Keys has been with the Richmond office for the past 18 years, serving during the past six years as assistant manager, and Mr. Metzger has held various positions with these companies for the past 12 years.

Edwin J. Mohr has been elected president of the **Gould Storage Battery Company, Inc.,** Depew, N. Y., succeeding **Kenneth M. Smith,** who resigned to become associated with the Horace E. Dodge Boat Works. Mr. Mohr was

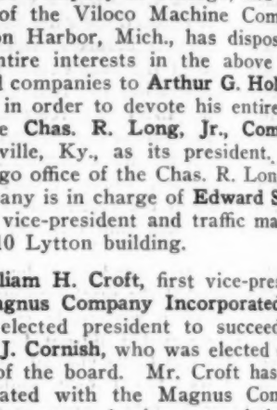


Edwin J. Mohr

previously manager of production for the Gould Coupler Company and the Symington Company. He was born at Rochester, N. Y., and received his education in the public schools of his native town and in the Rochester Mechanics Institute. Mr. Mohr entered the employ of the Buffalo, Rochester & Pittsburgh as assistant purchasing agent and in 1909 became connected with the Symington Company, at Rochester, N. Y., serving successively as assistant secretary, assistant to vice-president, assistant general manager, and later manager of production for the Symington Company and the Gould Coupler Company.

Charles R. Long, Jr., who has been president of the Viloco Railway Equipment Company, vice-president of the Okadee Company at Chicago, and president of the Viloco Machine Company, Benton Harbor, Mich., has disposed of his entire interests in the above mentioned companies to **Arthur G. Hollingshead,** in order to devote his entire time to the **Chas. R. Long, Jr., Company,** Louisville, Ky., as its president. The Chicago office of the Chas. R. Long, Jr., Company is in charge of **Edward S. DePass,** vice-president and traffic manager at 1610 Lytton building.

William H. Croft, first vice-president of **Magnus Company Incorporated,** has been elected president to succeed **Edward J. Cornish,** who was elected chairman of the board. Mr. Croft has been associated with the Magnus Company for many years, having entered the employ of the Hewitt Manufacturing Company, a subsidiary of the Magnus Metal



William H. Croft

Company, in 1893. In 1904 Mr. Croft became assistant to the president of the Magnus Metal Company and in 1905 was made sales manager. In 1907 the National Lead Company acquired the Magnus Metal Company and its subsidiary and Mr. Croft was elected vice-president in charge of operations and sales, of both the Hewitt and Magnus companies. When these two companies were merged into the Magnus Company Incorporated, in 1915, Mr. Croft was elected first vice-president. Mr. Croft's headquarters will be at Chicago.

Construction

ARKANSAS WESTERN. — This company has applied to the Interstate Commerce Commission for a certificate for the construction of an extension from Waldron into the southeastern part of Scott county, Ark., 23.5 miles.

ATCHISON, TOPEKA & SANTA FE.—This company contemplates the construction of an extension on the Kansas City, Mexico & Orient from San Angelo, Tex., to Sonora, 65 miles, which will tap a live stock raising area in Sutton and Crockett counties. Grading of this line and construction of a bridge over the Concha river, south of San Angelo, were completed by the Orient several years ago.

CANADIAN NATIONAL.—This company plans the reconstruction of its car shop at Melville, Sask., which was recently destroyed by fire.

CHESAPEAKE & OHIO.—Bids will be received until March 8 for the construction of an addition to the roundhouse, a coaling station and various terminal buildings at Fulton, Va. Bids close on March 11 for the construction of a water treating plant with necessary pipe lines and other water station equipment at Fulton.

CHESAPEAKE & OHIO—This company will receive bids up to March 15, at Richmond, Va., for the construction of roundhouse improvements to its engine terminal at Stevens, Ky., including the extension of 13 stalls, a new coaling station and other facilities. The project has been estimated to cost about $594,000.

CHESAPEAKE & OHIO.—This company has awarded a contract to the United Engineers & Constructors, Philadelphia, Pa., for locomotive shop improvements at Huntington, W. Va., estimated to cost $3,493,400. Another contract has been awarded to the Hughes-Foulkrod Company, Pittsburgh, Pa., for the construction of new freight car shops at Russell, Ky., estimated to cost $3,162,000. Further details concerning this project were reported in the February 16, issue of the *Railway Age*.

CHICAGO & NORTH WESTERN.—Bids were closed on February 26 for the construction of a concrete dock and warehouse at Milwaukee, Wis. The two-story portion of this building will have outside dimensions of 17 ft. by 422 ft., while the one-story section will have dimensions of 75 ft. by 394 ft. Bids closed on March 1 for the construction of a 25-ft. extension to 10 stalls of the roundhouse at Proviso, Ill.

CHICAGO & NORTH WESTERN.—In connection with the Chicago Daily News, this railroad plans the construction of a walkway over Canal street, Chicago, which will connect the North Western passenger station with the office building of the Daily News which is now under construction. The pedestrian passageway will provide direct connection between the station and elevators which will lead to the railroad's new general offices in the building and suburban passengers in going to and from the train floor concourse in the station will pass over the walkway and through the office building. The total cost of this construction, $125,000, will be borne equally by the North Western and the Daily News.

COLUMBIA BASIN, YAKIMA & TIDEWATER.—Articles of incorporation for the construction of this railroad between Yakima, Wash., and a point on the Columbia river north of Vancouver, Wash., about 200 miles, were filed at Olympia, Wash., on February 11. The line is expected to tap an area north of the Columbia river which is devoted to lumbering, and fruit and livestock raising and is rich in mineral deposits. The construction of the railroad is expected to involve the driving of a 17,000-ft. tunnel through the Cascade Mountains.

CHICAGO, ROCK ISLAND & PACIFIC.—A contract has been awarded to the Roberts & Schaefer Company, Chicago, for the construction of a 600-ton automatic electric three track coaling station with sanding facilities at Herington, Kan., to replace a wooden structure which was destroyed by fire.

COLORADO & SOUTHERN.—The Colorado Railroad has applied to the Interstate Commerce Commission for authority to construct an extension of its Ingleside branch, in Larimer county, Colo., 4.7 miles, to be operated under lease by the Colorado & Southern.

DENVER & SALT LAKE WESTERN.—Oral argument was heard by the Interstate Commerce Commission on February 26 on this company's application for authority to build the cut-off from Orestod to Dotsero, to connect the line through the Moffat tunnel with the line of the Denver & Rio Grande Western. The latter company opposed the granting of the application unless a condition is imposed allowing it to have trackage rights over the line through the tunnel. Elmer Brock, representing the D. & S. L. W., told the commission that the construction of the cut-off would not remove the possibility of the later construction of the proposed line from Craig, Colo., the present terminus, to Provo, Utah.

DENVER & RIO GRANDE WESTERN.—This company has included in its budget for 1929 the expenditure of $91,200 for the construction of additional yard and passing tracks and the lengthening of present passing tracks at various points on its lines. At Burnham, Colo., an electric power plant will be constructed at a cost of about $73,000. A total of $300,000 will be expended for the replacement of wooden bridge structures with permanent reinforced concrete or steel structures.

ERIE—This company will be ready to receive bids about the middle of March for the construction of its new Elmwood avenue freight house to be built at Buffalo, N. Y. Bids already have been received and a contract will be let soon for the construction of a lateral highway to eliminate a grade crossing on its line at Campbell Hall, N. Y.

GREAT NORTHERN—This road has filed application with the Interstate Commerce Commission for authority to build an extension south from Klamath Falls, Ore., about 80 miles to meet an extension proposed by the Western Pacific north from Paxton or Keddie, Cal., which would give the Great Northern access to San Francisco via the Western Pacific.

HIGHWOOD WESTERN.—This company, for which a charter was issued during 1928, has prepared plans for the construction of a railroad from Okotoks, Alta., on the Calgary-MacLeod branch of the Canadian Pacific, west to the Highwood River valley, 42 miles.

LOUISVILLE & NASHVILLE.—A contract has been let to the Horace Williams Company, Louisville, Ky., for the construction of a brick and steel warehouse on the Ohio river at Louisville. The building will have outside dimensions of 100 ft. by 400 ft. and will cost about $230,000.

LOUISVILLE & NASHVILLE.—Application has been filed with the Interstate Commerce Commission for a certificate authorizing the construction of an extension of its Left Fork branch from Fox Ridge, Ky., up the Left Fork of Straight Creek approximately 7.5 miles.

MISSOURI SOUTHERN.—The Interstate Commerce Commission has authorized this company to construct an 18-mile extension in Reynolds and Shannon Counties, Mo.; estimated cost, $167,200.

NASHVILLE, CHATTANOOGA & ST. LOUIS.—This company plans to construct with its own forces a brick addition to its roundhouse at Nashville, Tenn., at a cost of about $35,000.

NICHOLAS, FAYETTE & GREENBRIER.—A contract has been awarded to A. Guthrie & Co., St. Paul, Minn., for the construction of a line from a connection with the New York Central at Swiss, W. Va., to a connection with the Loop & Lookout Railroad at Nallen, W. Va., 28 miles. This contract includes the grading for the road bed, most of which involves rock excavation, and the driving of one tunnel 3,300 ft. long and another 900 ft. long.

PENNSYLVANIA.—This company has awarded a contract to the Ferguson & Edmondson Company, Pittsburgh, Pa., for the re-construction of a bridge over the state highway on its Sang Hollow extension near Seward, Pa., to cost about $25,000.

Financial

BALTIMORE & OHIO.—*Clayton Act Proceeding.*—The Interstate Commerce Commission has cancelled the hearing set for February 25 on its complaint against this company for alleged violation of the Clayton law in purchasing stock of the Western Maryland and has reassigned it for April 29, before Assistant Director C. V. Burnside of the Bureau of Finance.

BANGOR & AROOSTOOK.—*Trackage Rights.*—The Interstate Commerce Commission has authorized this company to operate under trackage rights over the Maine Central between North Maine Junction, Me., and Bangor, 6 miles.

DELAWARE & HUDSON.—*Directors.*—The Interstate Commerce Commission has authorized officers and members of the board of managers of the Delaware & Hudson Company to serve as officers and directors of the Delaware & Hudson Railroad Corporation.

GREAT NORTHERN.—*Acquisition of Control.*—The Interstate Commerce Commission has authorized this company to acquire and operate the Duluth Terminal Railway, the Minneapolis Western, the Minneapolis Belt Line, the Great Northern Terminal Railway, the Great Falls & Teton County, the Montana Eastern, and the Watertown & Sioux Falls Railway. The Great Northern owns all the outstanding stock of these companies and will acquire them at book value less advances heretofore made.

MISSOURI PACIFIC.—*Unification of Subsidiaries.*—This company has applied to the Interstate Commerce Commission for authority to acquire control by 99-year lease of the properties of 22 subsidiaries now controlled through stock ownership; the New Orleans, Texas & Mexico, the International-Great Northern, the St. Louis, Brownsville & Mexico, the Orange & Northwestern, the New Iberia & Northern, the Iberia, St. Mary & Eastern, the Houston & Brazos Valley, the San Benito & Rio Grande, the San Antonio, Uvalde & Gulf, the Sugar Land, the Austin Dam & Suburban, the Asherton & Gulf, the Asphalt Belt, the San Antonio Southern, the Natchez & Louisiana Transfer, the New Orleans & Lower Coast, the Fort Smith Suburban, and the Missouri Pacific Railroad Corporation in Nebraska. The

(*Continued on page 560*)

Annual Reports

The Baltimore & Ohio Railroad Company

OFFICE OF THE PRESIDENT
BALTIMORE, MD., February 28, 1929.

To the Stockholders of
The Baltimore and Ohio Railroad Company:

In order that you may be informed as promptly as may be of the results obtained from the operation of your property for the year ended December 31, 1928, the President and Directors submit herewith a condensed income statement, compared with the preceding year, together with balance sheet, as of December 31, 1928, and certain other general information which it is thought will be of interest.

The Annual Report in the customary form will be prepared and forwarded later to those stockholders who have or may advise the Secretary of the Company of their desire to receive a copy.

The net income for the year available for dividends and other corporate purposes, after the payment of interest, rentals, taxes and other fixed charges, was.....$29,100,931. This was an increase of $6,467,586, compared with 1927, and was the largest net income in the history of your Company.

After paying the 4% dividend upon the Preferred Stock there remained .....$26,746,403, equal to $12.43 per share on the common stock outstanding. Dividends at the rate of 6% were declared on the common stock outstanding during the year, after which there remained from the year's operations to be carried to profit and loss

THE BALTIMORE AND OHIO RAILROAD COMPANY

Income Account

	1928	1927	Increase or Decrease Amount	%
Revenue from freight transportation	$197,215,444	$203,571,444	$ *6,356,000	*3.12
Revenue from passenger transportation	23,712,130	26,286,707	*2,574,577	*9.79
Revenue from mail, express and other transportation service	15,891,107	16,223,916	*332,809	*2.05
Total Railway Operating Revenues	$236,818,681	$246,082,067	$ *9,263,386	*3.76
Maintenance of Way and Structures	$ 26,895,746	$ 30,895,333	$ *3,999,587	*12.95
Maintenance of Equipment	47,404,095	51,318,762	*3,914,667	*7.63
Traffic	5,748,601	5,599,463	149,138	2.66
Transportation	82,429,731	87,290,534	*4,860,803	*5.57
General	7,958,369	8,851,616	*893,247	*10.09
Miscellaneous	2,114,326	2,215,354	*101,028	*4.56
Total Railway Operating Expenses	$172,550,868	$186,171,062	$*13,620,194	*7.32
Transportation Ratio	34.81%	35.47%		
Total Operating Ratio	72.86%	75.65%		
Net Revenue from Railway Operations	$ 64,267,813	$ 59,911,005	$ 4,356,808	7.27
Taxes	$ 11,638,718	$ 12,286,663	$ *647,945	*5.27
Equipment, Joint Facility Rents, etc.	3,241,378	2,806,145	435,233	15.51
Total Charges to Net Revenue	$ 14,880,096	$ 15,092,808	$ *212,712	*1.41
Net Railway Operating Income, as defined in Transportation Act of 1920	$ 49,387,717	$ 44,818,197	$ 4,569,520	10.20
Other Income—Rents, Dividends on Stock and Interest on Bonds owned	7,378,325	8,570,727	*1,192,402	*13.91
Total Income from all sources	$ 56,766,042	$ 53,388,924	$ 3,377,118	6.33
Deductions for Interest and Rentals	$ 26,997,767	$ 30,091,086	$ *3,093,319	*10.28
All Other Charges against Income	667,344	664,493	2,851	.43
Total Deductions from Income	$ 27,665,111	$ 30,755,579	$ *3,090,468	*10.05
Balance of Income available for dividends and other Corporate purposes	$ 29,100,931	$ 22,633,345	$ 6,467,586	28.58
Dividends declared:				
Preferred Stock—4%	$ 2,354,528	$ 2,354,528	.....	.....
Common Stock—6%	12,911,275	10,964,491	1,946,784	17.76
Total Dividends	$ 15,265,803	$ 13,319,019	$ 1,946,784	14.62
Leaving a Surplus, after all charges and dividends declared, of	$ 13,835,128	$ 9,314,326	$ 4,520,802	48.54

* Decrease.

[ADVERTISEMENT]

Statistics

Revenue Passengers Carried	10,257,996	12,873,274	*2,615,278	*20.32
Revenue Passenger Miles	768,550,062	844,449,038	*75,898,974	*8.99
Average Miles per Passenger	74.92	65.60	9.32	14.21
Average Rate per Passenger Mile (cents)	3.085	3.113	*.028	*.90
Tons of Revenue Freight Handled	103,714,942	108,495,849	*4,780,907	*4.41
Revenue Ton Miles	20,243,199,084	20,841,869,236	*598,670,152	*2.87
Average Miles per Ton	195.18	192.10	3.08	1.60
Average Rate per Ton Mile (mills)	9.74	9.77	*0.03	*.31
Revenue Tons per Train Mile	868.28	856.67	11.61	1.36
Freight Train Miles per Train Hour	11.43	10.67	.76	7.12

* Decrease.

THE BALTIMORE AND OHIO RAILROAD COMPANY

Condensed Balance Sheet—December 31, 1928

ASSETS

Investment in Property used in Transportation Service		$869,468,135
Road	$617,048,276	
Equipment	252,419,859	
Investment in Separately Operated Companies, including Miscellaneous Physical Property		58,962,821
Investment in Sinking Funds and Deposits account Property Sold		668,544
Investment in Other Companies		58,778,954
Total Investments		$987,878,454
Current Assets		57,184,712
Cash	$19,196,369	
Other	37,988,343	
Deferred Assets		4,811,837
Total Assets		$1,049,875,003

LIABILITIES

Capital Stock Outstanding		$274,051,035
Preferred	$58,863,181	
Common	215,187,854	
Premium on Capital Stock		3,320,231
Long Term Debt		549,062,689
Mortgage Debt	$477,433,039	
Equipment Obligations	65,193,700	
Capitalized Leaseholds	6,435,950	
Current Liabilities—Traffic and Car Service Balances, Accounts and Wages Payable, Interest and Dividends Matured and Unpaid, Unmatured Dividends Declared, and Other Current Liabilities		28,514,869
Liability for Provident Funds and Other Deferred Items		9,325,212
Accrued Depreciation—Equipment		66,443,844
Reserve for Taxes, Insurance, Operation, etc.		15,252,017
Surplus		103,905,106
Total Liabilities		$1,049,875,003

Road Operated and Equipment

Total Miles of Road Operated	5,639
Total Miles of All Track Operated	11,058
Locomotives	Steam, 2,435; Electric, 13; Other, 2 — 2,450
Passenger Train Cars	1,680
Freight Train Cars	103,891
Tugs, Barges and Other Boats	177
Work Equipment	3,207

$13,835,128. The total accumulated surplus of your Company on December 31, 1928, was $103,905,106.21.

During the year there was an increase in investment in road of ..... $ 7,049,022

New equipment was acquired at a cost of $6,030,213 and old equipment retired in the amount of 5,158,420 Resulting in a net increase in Investment in Equipment of 871,793

Total ..... $ 7,920,815

The additional equipment consisted of one especially heavy passenger locomotive of the "President" type and three heavy freight locomotives; these engines built to demonstrate new features were constructed at the Company's Mt. Clare Shops; also 10 new, all-steel baggage and mail cars, 2,200 all-steel box cars and certain miscellaneous pieces of equipment. In order to effect the more economical operation of local passenger service, 13 additional gas-electric motor cars and 3 gas-electric car trailers were purchased.

One hundred and eight locomotives, 4 passenger train cars, 3,707 freight train cars, 423 pieces of work equipment and 2 units of floating equipment, no longer suitable for modern and efficient service, were retired during the year.

On December 17, 1928, a new passenger terminal in the Chanin Building at 42nd Street and Lexington Avenue, New York, was placed in service. From this station direct access is had to the subway, Grand Central Terminal, and various hotels. To and from this station the train connection motor coaches are operated to trainside at the Jersey City Terminal. Passengers may board and leave the coaches within the building.

Traffic conditions during the first six months of 1928 were not as favorable as during the preceding year; the first half of the year showed a decrease in revenue of $12,164,633, of which $10,692,460 was in freight earnings. Beginning with and subsequent to July, however, there was an increase in the volume of traffic so that at the end of the year the decrease in total operating revenues had been reduced to $9,263,386, of which $6,356,000 was on account of freight, or 3.12%. Passenger traffic continued to decrease, the loss in such revenue for the year having been $2,574,577, or 9.79%.

The reduction in operating revenues of ..... $ 9,263,386

was more than offset by a reduction in operating expenses of 13,620,194

Resulting in an increase in net revenue of ..... $ 4,356,808

Transportation expenses decreased $4,860,803, or 5.57%, and consumed 34.81 cents of each dollar earned in 1928, compared with 35.47 cents in 1927. This was accomplished notwithstanding the reduction in gross revenues and increases in rates of pay granted through arbitration in 1928 and increases granted in 1927, not fully reflected in that year.

The operating expense ratio in 1928 was 72.86%, as compared with 75.65% in 1927.

The property has been well maintained and was in good physical condition at the end of the year.

The Management commends the Baltimore and Ohio service to the shareholders and through them to the general public, and solicits their cooperation towards securing a greater proportion of the business moving to and from the territory which it serves. The assistance given by the shareholders in the past has been most helpful, and it is hoped this cooperation will be continued and extended where opportunity may offer.

DANIEL WILLARD, President.

[ADVERTISEMENT]

Financial

(*Continued from page 558*)

unification sought, the application said, will be productive of better service, economy, efficiency, and will bring the lines of railroad into a single operating unit, so that unnecessary operation and accounting for each carrier, together with separate reports thereon to the state and federal commissions, will be dispensed with. Substantial savings in expenses, substitution in many instances of single-line for joint-line services, and expedition of traffic are also promised. It is proposed to pay as rental 7 per cent annual dividends on the stock of the New Orleans, Texas & Mexico.

SOUTHERN.—*Control of Mobile & Ohio.*—The city of Mobile, Ala., has filed with the Interstate Commerce Commission a petition asking it to bring proceedings against the Southern under the terms of the Clayton anti-trust law and to require it to show cause why it should not divest itself of ownership and control of stock of the Mobile & Ohio. It is stated that control of the road by the Southern has tended to lessen competition between the two roads and to promote the interests of other ports at which the Southern has terminal investments.

WABASH.—*Equipment Trust.*—The Interstate Commerce Commission has authorized this company to assume obligation and liability in respect to $3,375,000 of equipment trust certificates, Series H, to mature in equal annual installments from 1930 to 1944, paying dividends at the rate of 4½ per cent. The company is authorized to sell these certificates to the highest bidder, Edward Lowber Stokes & Company, Philadelphia, at 96.79, which will make the cost 5.0166 per cent.

Average Prices of Stocks and of Bonds

	Feb. 26	Last week	Last year
Average price of 20 representative railway stocks.	133.06	131.48	116.27
Average price of 20 representative railway bonds..	91.49	91.37	96.93

Dividends Declared

Alabama & Vicksburg.—3 per cent, semi-annually, payable April 1 to holders of record March 8.

Boston & Albany.—2 per cent, quarterly, payable March 30 to holders of record February 28.

Chestnut Hill Railroad.—$.75, quarterly, payable March 4 to holders of record February 21 to March 3.

Consolidated Railroads of Cuba.—Preferred, 1½ per cent, quarterly, payable April 1 to holders of record March 11a.

Cuba Railroad.—Common, $1.20, quarterly, payable March 28 to holders of record March 28a.

Delaware & Bound Brook.—$2.00, quarterly, payable February 20 to holders of record February 19a.

Erie & Pittsburgh.—$.87½, quarterly, payable March 9 to holders of record February 28.

Missouri Pacific.—Preferred, $1.25, quarterly, payable April 1 to holders of record March 8.

Northern Pacific.—1¼ per cent, quarterly, payable May 1 to holders of record March 12.

Philadelphia, Germantown & Norristown.—$1.50, quarterly, payable March 4 to holders of record February 21 to March 3.

Pittsburgh, Youngstown & Ashtabula.—Preferred, 1¼ per cent, quarterly, payable March 1 to holders of record February 20.

Texas & Pacific.—Common, $1.25, quarterly, payable April 1 to holders of record March 15.

Vicksburg, Shreveport & Pacific.—Preferred, 2½ per cent, semi-annually; Common, 2½ per cent, semi-annually, both payable April 1 to holders of record March 8.

Railway Officers

Executive

J. W. Muessen resigned on February 9, as vice-president and general manager of the Chicago, Springfield & St. Louis, with headquarters at Springfield, Ill. He will continue in an advisory capacity with the railroad until April 1.

J. W. Hevron, of the Illinois Central, general superintendent of the Southern Lines and the Gulf and Ship Island, with headquarters at New Orleans, La., has been transferred to the Northern Lines with headquarters at Chicago. T. J. Quigley Superintendent of the Illinois Division with headquarters at Champaign, Ill., has been promoted to general superintendent of the Southern Lines and the G. & S. I. succeeding Mr. Hevron.

Financial, Legal and Accounting

Charles D. Pantle, who has been promoted to assistant auditor of the Missouri-Kansas-Texas, with headquarters at St. Louis, Mo., has been connected with that railway for nearly 12 years. He was born on September 18, 1891, at Atchison, Kan., and after attending a business college, entered railway service on July 26, 1912, on the Missouri Pacific. He served in various minor positions on that railroad, including that of clerk to the assistant accountant in the office of the superintendent at Falls City, Neb. On August 27, 1917, Mr. Pantle entered the service of the Katy as a clerk in the accounting department at St. Louis, being advanced on January 1, of the following year to general bookkeeper. On September 1, 1918, he was promoted to general accountant, with headquarters at St. Louis. His promotion to assistant auditor became effective on January 1 of the current year.

Operating

Abner P. Leddon, who has been appointed general manager of the Alabama, Florida & Gulf, with headquarters at Dothan, Ala., was born in Geneva County, Alabama, on September 29, 1897. He was educated in the grammar & high schools of Geneva County and Campbell's Institute (Dothan, Ala.) and later completed various correspondence courses on different subjects. He entered the service of the Atlantic Coast Line in September, 1917, as clerk and stenographer in the office of the chief dispatcher. He remained in that position until 1919, at which time he left railroad work to teach in a business college. From this date until August, 1922, Mr. Leddon held various positions with different firms, returning to railroad work on the latter date as relief stenographer and clerk in the chief dispatcher's office of the Atlantic Coast Line. Later in the same year he was appointed stenographer and ticket clerk for the same road, remaining in that position until February, 1924, when he became assistant accountant in the general superintendent's office at Savannah. From

Abner P. Leddon

July, 1924, until September, 1926, Mr. Leddon was chief clerk in the office of the general live stock agent at Savannah, and on the latter date he was appointed traveling freight agent with headquarters at Albany, Ga., which position he held until his recent appointment as general manager.

Traffic

C. J. McDonald, manager of perishable freight traffic of the Southern Pacific, has been promoted to mail and express traffic manager, with headquarters as before at San Francisco, Cal. **William C. Fitch,** freight claim agent, with headquarters at San Francisco, has been promoted to manager of perishable freight traffic, succeeding Mr. McDonald. **J. R. Nixon,** assistant freight claim agent at San Francisco, succeeds Mr. Fitch.

Omar N. Spain, general eastern passenger agent of the Chesapeake & Ohio, with headquarters at New York, has been appointed assistant general passenger agent, with headquarters at Richmond, Va. **C. B. Kincaid,** city passenger agent, with headquarters at Washington, D. C., has been appointed general eastern passenger agent, with headquarters at New York. **E. N. Bailey,** city passenger agent at Richmond, Va., will succeed Mr. Kincaid as city passenger agent with headquarters at Washington, D. C.

George B. Rice, who has been appointed freight traffic manager of the Seaboard Air Line, with headquarters at Norfolk, Va., was born on January 19, 1885, at Tappahannock, Va. He entered

railroad service in December, 1901, with the Southern. In 1904 he went with the Seaboard Air Line as file clerk in the general freight office and two years later he became file and rate clerk in the general freight office of the Atlantic Coast Line. From the latter part of 1907 until May, 1908, he was rate clerk in the general freight office of the Georgia Southern & Florida. He then went to the Atlanta, Birmingham & Atlantic in a similar position for a few months and in October of the same year returned to the Southern in the same capacity. From 1909 to 1911 he was rate clerk in the traffic department of the Carolina, Clinchfield & Ohio. In the latter year he went to the general freight office of the Seaboard Air Line in the same capacity, remaining there until March 1, 1920, when he was promoted to assistant chief clerk to the first vice-president. In September, 1922, he was appointed assistant to the first vice-president, serving in that position until July 1, 1926, when he was appointed assistant freight traffic manager. Mr. Rice served in the latter position until his recent appointment as freight traffic manager.

Engineering, Maintenance of Way and Signaling

L. R. Boettcher, assistant engineer of the Chicago, Milwaukee, St. Paul & Pacific at Milwaukee, Wis., has been promoted to division engineer, with headquarters at Wausau, Wis., a newly created position.

Robert H. Parke, division engineer of the Boston & Maine, with headquarters at Dover, N. H., has been appointed resident engineer, with headquarters at Springfield, Mass. **John F. Collins,** has been appointed division engineer of the Portland division at Dover, N. H., succeeding Mr. Parke. **John P. Cronin** has been promoted to office engineer, with headquarters at Boston, Mass., succeeding **P. L. Dowe,** who has been assigned to other duties. **Henry L. Restall** has been promoted to assistant valuation engineer, with headquarters at Boston, reporting to the assistant chief engineer. He will be in charge of and responsible for compliance with Valuation Order No. 3 and future orders of the Commission in relation thereto. **Algie E. Cluff,** assistant track supervisor, with headquarters at Nashua, N. H., has been appointed track supervisor, with headquarters at Dover, N. H., succeeding **C. W. Lewis,** who has been assigned to other duties. **Edward W. Backes** has been promoted to resident engineer, with headquarters at Concord, N. H. **Henry C. Archibald** has been appointed assistant division engineer, with headquarters at Fitchburg, Mass., succeeding **John F. Whitney,** resigned.

Ralph R. Strother, who has been promoted to assistant chief engineer of the Chicago, St. Paul, Minneapolis & Omaha, with headquarters at St. Paul, Minn., has been in the service of that railway for 15 years. He was born at Hubbard, Iowa, on August 17, 1885, and graduated from a course in civil engineering at Iowa State College in 1909. Mr. Strother entered railway service in the engineering department of the Chicago &

Ralph R. Strother

North Western in September, 1909, five years later being appointed assistant engineer on field work for the Omaha. In 1920 he was further promoted to assistant engineer in charge of estimates, with headquarters at St. Paul. His promotion to assistant chief engineer became effective on February 1.

R. A. Van Ness, who has been promoted to bridge engineer of the Atchison, Topeka & Santa Fe system, with headquarters at Chicago, has been connected with the engineering department of that railroad for ten years. He was

R. A. Van Ness

born at McLean, Ill., on October 13, 1892, and was graduated from Ohio Northern University with a civil engineering degree in 1914. During 1914 and 1915 he spent a year in graduate work at the University of Washington, then entering the United States government valuation service in May, 1915. From April, 1916, to February, 1917, he was connected with the American Bridge Company at the Gary (Ind.) plant, then entering railway service in the bridge department of the Santa Fe at Chicago. In May, 1917, Mr. Van Ness enlisted in the Engineering Corps of the United States Army, returning to the Santa Fe in July, 1919, as assistant engineer on the detailing and design of various buildings and bridge structures. In March, 1925, he was promoted to resident engineer on the Santa Fe railway and highway bridge over the Mississippi river at Fort Madison, Iowa, where he remained until April, 1928, when he was transferred to the Panhandle & Santa Fe office building at Amarillo, Tex. Mr. Van Ness' promotion to bridge engineer of the Santa Fe system became effective on February 10.

Purchases and Stores

Robert H. Adams, who has been promoted to purchasing agent of the Los Angeles & Salt Lake, with headquarters at Los Angeles, Cal., has been connected with that railway for more than 28 years. He was born at Minneapolis, Minn., on August 31, 1873, and after completing

Robert H. Adams

his elementary education in the public schools he attended St. Edwards Academy, Deadwood, S. D., the University of Notre Dame and the Los Angeles Business College. On January 15, 1901, he entered railway service as purchasing agent of the Empire Construction Company, a corporation formed to construct the San Pedro, Los Angeles & Salt Lake (now the L. A. & S. L.). After the railroad was placed in operation Mr. Adams was also appointed purchasing agent of that company in June, 1903. In January, 1904, he was appointed chief clerk to the purchasing agent of the S. P., L. A. & S. L., being promoted to assistant purchasing agent, with headquarters at Los Angeles, on July, 1, 1916. His promotion to purchasing agent became effective on January 1.

Mechanical

Daniel G. Martinez has been appointed master mechanic of the National of Mexico, with headquarters at Acambaro, Gto.

W. H. Hall, chief car inspector of the Central Railroad Company of New Jersey, with headquarters at Jersey City, N. J., was retired on pension, at his own request, on February 1, after having served that road for 34 years.

D. P. Carey, master mechanic of the Midland division of the New York, New Haven & Hartford, has been appointed superintendent of shops, with headquarters at Readville, Mass. **W. R. Sederquest** has been appointed master mechanic of the Midland division, with headquarters at Boston, Mass., succeeding Mr. Carey, and **J. B. Porter** has been appointed master mechanic of the Old Colony division, with headquarters at Taunton, Mass., succeeding Mr. Sederquest.

George Crowder, who has been appointed superintendent of motive power of the Georgia & Florida, with headquarters at Douglas, Ga., was born in Meriwether County, Georgia. He was educated in the grammar and high schools of that county and later also completed studies in mechanical drawing and air brakes with a correspondence School. In 1901 he entered the employ of the Baldwin Locomotive Works as machinist's apprentice and in 1904, at the conclusion of his apprenticeship, he was appointed track foreman in the erecting shop. He remained with this company until the latter part of 1904, when he resigned

George Crowder

to become a machinist with the El Paso & Northeastern, now part of Southern Pacific, at Alamo Gordo, N. M. He returned to Georgia in 1905 as machinist in the Waldo shops of the Seaboard Air Line, in which capacity he remained until the early part of 1907. He left the service of the Seaboard Air Line at this time to become roundhouse foreman of the Atlantic Coast Line at Jacksonville, Fla. Later in the same year he went to Atlanta, Ga., to enter the service of the Southern. On August 8, 1907, Mr. Crowder was appointed general foreman of the Douglas, Augusta & Gulf (now the Georgia & Florida) at Douglas, Ga., continuing in that position until February 1, when he was promoted to superintendent of motive power.

Obituary

Henry Kleine, assistant general roadmaster of the Chicago & Alton, with headquarters at Slater, Mo., died at his home in that city on February 17 at the age of 70 years.

William H. Bennett who retired from active railway service as superintendent of telegraph of the Chicago & North Western in October, 1928, died at his home in Chicago on February 27. Mr. Bennett had been connected with the North Western for a period in excess of 50 years.

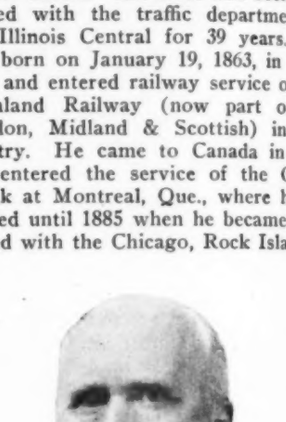
G. E. Thomson, district master car builder of the New York Central at Englewood, (Chicago) Ill., died at Hot Springs, Ark., on February 4. Mr. Thomson had gone to Hot Springs to recover from a two weeks' illness from influenza and died in a doctor's office after alighting from a train.

Benjamin D. Warfield, district attorney for the Louisville & Nashville for Kentucky as a member of the law firm of Woodward, Hamilton, Warfield & Hobson, with headquarters at Louisville, Ky., died at his home at Anchorage, Ky., on February 19, following an attack of influenza. Mr. Warfield had been in the service of the law department of the Louisville & Nashville—almost 44 years, since March 1, 1885.

Harry G. Spaulding, supervisor of fire prevention and insurance of the Wabash, with headquarters at St. Louis, Mo., died at the Wabash hospital at Decatur, Ill., on February 16. Mr. Spaulding was 40 years of age and entered railway service as a freight brakeman on the Boston & Maine. In 1912 he was appointed assistant superintendent of the Mount Washington Railway at Base Station, N. H. Later he was advanced to superintendent and in 1917 he was appointed assistant superintendent of the B. & M. at Woodville, N. H. From 1919 to 1921 Mr. Spaulding was on the staff of the corporate chief engineer, then serving for three years with the United Shoe Machinery Company. He entered the service of the Wabash in June, 1924, in the valuation and real estate department, being promoted to the position of supervisor of fire prevention and insurance in January, 1926.

Loren H. Turner, special representative to the vice-president of the Pittsburgh & Lake Erie, and former superintendent of motive power of that road, died in Pittsburgh, Pa., on February 23. Mr. Turner was born in Wayne county, N. Y., on May 13, 1852. He entered railway service in 1869 as apprentice in the boiler shop of the Lake Shore & Michigan Southern. He subsequently served two years in the boiler shop of this road at Adrian, Mich., three years as a machinist's apprentice at Elkhart, Ind., two years as a machinist in the erecting department of the same shop, four years as gang foreman of the same department, and three years as foreman of the engine house at Air Line Junction, near Toledo, O. From 1884 to 1887 he was general foreman for the same road at Norfolk, O., and on the latter date he was appointed superintendent of motive power of the Pittsburgh & Lake Erie, which position he held continuously until 1923, when he was appointed special representative to the vice-president of that road. He held the latter position until the time of his death which, as noted above, occurred on February 23.

Donald Rose, European traffic manager of the Illinois Central, the Central of Georgia and the Ocean Steamship Company of Savannah, with headquarters at London, England, died at his home in that city on February 23 after a brief illness. Mr. Rose had been connected with the traffic department of the Illinois Central for 39 years. He was born on January 19, 1863, in Scotland and entered railway service on the Highland Railway (now part of the London, Midland & Scottish) in that country. He came to Canada in 1882 and entered the service of the Grand Trunk at Montreal, Que., where he remained until 1885 when he became connected with the Chicago, Rock Island &



Donald Rose

Pacific at Chicago. Later he was in the employ of the Atchison, Topeka & Santa Fe at Topeka, Kan. In 1890 Mr. Rose was appointed a clerk in the general freight office of the Illinois Central at Kansas City, being advanced to commercial agent at Salt Lake City, Utah, in 1900 and to chief clerk to the second vice-president at Chicago in 1902. He was promoted to European agent, with headquarters at London, in 1904, returning to the United States in 1908 to become assistant to the president, with headquarters at Chicago. In the following year he was promoted to freight traffic manager, with headquarters at Chicago. Mr. Rose had been European traffic manager at London since May 1, 1911, with the exception of the period of federal control of the railroads from 1918 to March, 1920, when he served as general development agent at Chicago.